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CONTENTS AND SUBJECT INDEX

Treatment of Lobar Pneumonia. W. H. Park, M.D.; J. G. M. Bullowa, M.D., and M. B. Rosenblüth, M.D., New York.....1503
Discussed by Drs. Cecil, Robey and Park.

Tinnitus Aurium. Dana W. Drury, M.D., Boston.....1508
Discussed by Drs. Pratt, Harkness, Engelbach and Drury.

Hypertensive Disease. Joseph H. Barach, M.D., Pittsburgh.....1511
Discussed by Drs. Rowntree and Barach.

Urinary Proteins of Nephritis. W. H. Welker, Ph.D.; Edmund Andrews, M.D., and William Thomas, M.D., Chicago.....1514
Discussed by Drs. Rowntree and Welker.

Medical Service for Industrial Worker. D. C. O'Neil, M.D., Binghamton, N. Y. 1516
Discussed by Drs. Crowder, Cheney, Welch, Cody, Bigelow, Woodward, Harris and O'Neil.

Changes in Posture. Clifford Sweet, M.D.; R. G. Watson, M.D., and H. E. Stafford, M.D., Oakland, Calif. 1519
Discussed by Drs. Evans, Kerley, McCleave and Sweet.

Myocardial Disease and Its Gastric Masquerades. David Riesman, M.D., Philadelphia.....1521
Discussed by Drs. Tuohy, Richards and Riesman.

Intestinal Obstruction. W. C. Foster, M.D., Rochester, Minn. 1523

Toxemia of Intestinal Obstruction. T. G. Orr, M.D., and R. L. Haden, M.D., Kansas City, Kan. 1529

Intradermal Vaccination. Charles Armstrong, M.D., Washington, D. C. 1530

Leiomyosarcoma of the Uterus. Walter T. Dannreuther, M.D., New York.....1532
Discussed by Drs. Schmitz, Novak and Dannreuther.

Ureteral Stricture in Cancer of Cervix. C. L. Martin, M.D., Dallas, Texas.....1537
Discussed by Drs. Schmitz, Pfahler and Martin.

Fractures of Forearm in Adult. C. B. Francisco, M.D., Kansas City, Mo. 1542
Discussed by Drs. Flagstad, Thomson and Allen.

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

Taking Roentgenograms of Infants. Harold Abramson, M.D., New York 1546

Foreign Body in Lacrimal Sac. F. H. Rodin, M.D., San Francisco..1546

Dystrophy of the Nails. Harold B. Thompson, M.D., Seattle.....1547

Hodgkin's Disease After Irradiation. G. Allen Robinson, M.D., New York 1548

Diagnosis of Bladder or Deep Urethral Injury. D. N. Eisendrath, M.D., and Harry C. Rolnick, M.D., Chicago 1548

EDITORIALS

Fasting in Epilepsy.....1550

Treatment of Anemias.....1551

Diet in Infancy.....1552

CURRENT COMMENT

Contaminated Toxin-Antitoxin..1553

(Subject Index on next page)

ASSOCIATION NEWS 1553

Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized on June 14, 1918. If undeliverable, return postage is guaranteed

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CONTENTS

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Another SAUNDERS' BOOK on Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics.

A. M. A., convention city, advantages....1553
additional hospitals and laboratories approved by 1553
Abdomen disease, cardiac origin....*1521
relaxation post partum....1567
Addison's Disease in negro....ab-1573
Air diagnosis of bladder or urethral injury *1548
Alopecia, treatment, cholesterol....ab-1584
Anemia, diagnosis, palm color test....ab-1575
in school children ab-1585
of infancy, liver powder for....ab-1585
pernicious, liver treatment....1561
treatment E-1551
Anesthesia, spinal, with ephedrine....ab-1576
Appendicitis, gangrenous, Vincent's serum for 1560
Appetite, natural, of infants....E-1552
Apricots for anemias....E-1551
Argyrosis of eyeball from stilet....*1546
Arms, pains 1562
Arrhythmia, oculoneurovegetative reflexes.ab-1586
Arteries, large, ligation, syndrome after..ab-1581
Ascariasis and pancreas necrosis....ab-1583
Association News 1553
Bacillus acidophilus therapy....ab-1574
Bacteriophage, therapeutic use....ab-1577
Bile Ducts, hydatid cysts ab-1581
Birth Control problem, Japan....1562
Bladder tumors, Botelho's test....ab-1586
cystitis with alkaline urine....1566
cystoscopy in uterus cancer....ab-1580
injury, air diagnosis....*1548
Blood, autotransfusion ab-1579
chlorides in intestinal obstruction....*1523
circulatory disorders in pneumonia..ab-1584
grouping of Eskimos ab-1577
groups and therapeutic malaria....ab-1585
pressure, high, constitution in....*1511
pressure, high, electrocardiograms in.ab-1575
pressure, high, vs. mitral stenosis....ab-1573
proteins in urine in nephritis....*1514
proteins vs. sedimentation speed....ab-1586
reaction, "Stufenphotometer"....ab-1585
regeneration vs. histamine....ab-1584
Book Notices 1569
Books Received 1570
Brain tumor in children....ab-1580
Bronchus calculi in stone grinder....ab-1574
diseases, postoperative ab-1582
tuberculous granuloma ab-1574
Calcinosis and scleroderma....ab-1575
Calcium deficiency 1567
Cerebrospinal Fluid tests, Takata-Ara..ab-1577
Chickenpox, immunity after....ab1584
identical with herpes zoster?....1561
Children, posture in *1519
backward, and manual arts....1561
psychology, education, training....1563
Cholera from cargo steamer....1562
Cholesterol treatment of alopecia....ab-1584
Cod Liver Oil, chemical reaction to....ab-1585
Colds, Eskimos susceptibility to....ab-1577
Constitution in hypertensive disease....*1511
Copper salts in anemias....E-1551
Correspondence 1566
Council on Pharmacy and Chemistry....1549
Cranium, percussion in infants....ab-1581
Deaths 1564
Dementia Praecox, heredity....ab-1579
Diabetes, fat metabolism in....ab-1573
Diaphragm changes from phrenicotomy.ab-1582
Diet, salt-free, Allen's....1567
self-selection, in infancy E-1552
Digestion, disorders, simulating myocardial disease *1521
Digestive Tract vs. infection....ab-1583
Diuresis in mercuric chloride poisoning.ab-1573
Ducretet, Fernand, a martyr....1561
"Dynamite headache" 1566
Dysostosis, hereditary craniofacial....ab-1581
Dystrophy, hereditary, of nails....*1547
Ear, middle, cancer ab-1582
Education of children....1563
Embolism, increase ab-1585
Endocarditis lenta, renal lesions in....ab-1581
Endocrine disorders, tinnitus aurium in..*1508
Epilepsy, fasting in E-1550
Ergosterol, irradiated, chemical reaction.ab-1585
Eskimos, blood grouping of....ab-1577
susceptibility to colds....ab-1577
Evidence, injuries, permanency of....Ml-1572
Face edema, thyroid treatment....ab-1581
Fasting, value in epilepsy....E-1550
Fees, provincial commissions on, Belgium..1563
Fever, "field and water"....ab-1585
Forearm, fractures of both bones....*1542
Foreign Letters 1559
Frames for taking roentgenograms....*1546
Gallbladder disease vs. infected tonsils..ab-1579
Glottis injuries from lemon drop....ab-1576
Goiter in Finland....ab-1586
Gonorrhea, Besredka's vaccine for....ab-1581
Government Services 1559
Granuloma, tuberculous, of bronchus...ab-1574
Hall, A. E. G., quackery (correction)....C-1566
Hay-Fever from plant-animal proteins....1567
Headache from dynamite....1566
Heart disease vs. tonsillectomy....ab-1573
electrocardiogram in hypertension....ab-1575
electrocardiogram vs. necropsy....ab-1573
myocardial disease, gastric masquerades.*1521
tire (correction) C-1566
Hemostatic bandage, shock from....ab-1582
Herpes zoster and chickenpox....1561
Histamine action vs. blood regeneration.ab-1584
Hospitals approved by A. M. A....1553
better facilities, Paris....1561
Housing, better, Paris....1561
Hydronephrosis after ureter stricture....*1539
Hyperthyroidism without palpable goiter..ab-1573
Immunity after chickenpox....ab-1584
Industrial workers, medical service for..*1516
Infants, buttermilk vs. acidified milk for..ab-1581
consultation centers, Japan....1562
frames for taking roentgenograms....*1546
self-selection of diet in....E-1552
Infection vs. digestive tract....ab-1583
Infectious Diseases, decline....ab-1577
Insanity, criminal, evidence, lay witness.Ml-1571
International Congress of Graphology....1561
Intestines, familial polyposis....ab-1583
obstruction, acute *1523
obstruction, toxemia of *1529
Iodide, prolonged use....ab-1575
Iron, medicinal, effect....ab-1575
Jaundice, plasma chlorides in....ab-1575
Kidney diet in anemias....E-1551
pelvis, bilateral occlusion by stone....ab-1585
Knock-Kneed children *1519
Labor, oxytocin and vasopressin in....ab-1580
Laboratories approved by A. M. A....1553
Lacrimal Sac, foreign body in....*1546
Leiomyosarcoma of uterus *1532
Leishmaniasis, transmission ab-1579
Leukocytes, group-specific differentiation.ab-1584
Liver disease, blood lactic acid in....ab-1584
hydatid cysts ab-1581
Lungs, cancer ab-1586
diseases, postoperative ab-1582
Lupus, gold treatment ab-1576
Lymphatics, tuberculosis, roentgen therapy ab-1582
Lymphoblastoma, basal metabolism in....ab-1574
Lymphogranuloma and tuberculosis....1563
roentgen and radium for....*1548
Malaria, therapeutic, and blood groups..ab-1585
Sir Ronald Ross to sell his archives....1560
Malpractice, award under compensation act as affecting Ml-1572
Marriages 1564
Measles after serum injection....ab-1584
prevention, immune serums ab-1580
Medical Education, Registration....1568
Medical Service for industrial worker...*1516
Belgian provincial commissions....1563
Medicolegal 1571
Meetings, Coming Meetings....1572
Mercuric Chloride poisoning, diuresis in.ab-1573
Migraine, inheritance ab-1575
Mikulicz drain 1567
Mitral stenosis vs. hypertension....ab-1573
Miura, Dr., death....1562
Murphy-Fowler-Ochsner treatment 1567
Mussels, poisoning from....ab-1578
Nails, hereditary dystrophy....*1547
Necropsy, educating public regarding...ab-1574
Nephritis, chronic, blood urea in....ab-1581
urine proteins of....*1514
Nerves, phrenicotomy, diaphragm changes from ab-1582
Neurosyphilis, general paralysis a form of..1562
New and Nonofficial Remedies 1549
News 1554
Osteitis, multiple cystic tuberculous....ab-1583
Oxytocin action on uterus in labor....ab-1580
Pain of upper limbs....1562
Palm color test ab-1575
Pancreas necrosis and ascariasis....ab-1583
Paralysis, general, form of neurosyphilis...1562
Parathyroids vs. thyroid....ab-1575
Pediatric Society, German....1563
Peptic Ulcer, perforated, roentgen sign..ab-1582
Peritonitis, Murphy-Fowler-Ochsner treatment 1567
Physicians, foreign, in Japan....1562
women, international conference....1562
Plethora, palm color test for....ab-1575
Pneumonia, Felton's antibody solution for.*1503
lobar, circulatory weakness in....ab-1584
Posture, physiologic changes in....*1519
"Powder head" 1566
Precipitin Test in schistosomiasis....ab-1578
to identify urine proteins....*1514
Proteins, plant and animal, sensitivity to.1567
Psychiatrists, congress of....1562
Puerperium, abdominal relaxation in....1567
Pyelonephritis, suppurative, Vincent's serum for 1560
Quackery, Belgian committee against....1563
Queries and Minor Notes....1566
Radio Program 1553
Radium treatment, technic....*1537
Radius, fractures *1542
Reflexes, oculoneurovegetative ab-1586
"Rheumatic infection" and internal medicine ab-1584
Ringworm of scalp, thallium acetate in..ab-1578
Roentgenograms, frames for taking....*1546
Ross, Sir Ronald, to sell his archives....1560
Sarcoma, roentgen ab-1583
Scarlet Fever, altered character....1560
Schistosomiasis, precipitin test in....ab-1578
Scleroderma and calcinosis....ab-1575
Serum reaction, "Stufenphotometer"....ab-1585
Silicosis, government report on....1599
Silver stilet, eyeball argyrosis from....*1546
Skin diseases vs. intradermal vaccination..*1530
Smallpox, intradermal vaccination....*1530
Society Proceedings 1572
Splenomegaly, bilirubin and cholesterol in blood ab-1581
State Board Examinations....1568
Stomach disease simulating myocardial disease *1521
"Stufenphotometer" ab-1585
Suppuration, bacteriophage therapy ab-1577
Thorax, roentgen study....*1546
Thrombosis, increase in....ab-1585
Thyroid vs. parathyroids....ab-1575
treatment in facial edema....ab-1581
Tinnitus aurium *1508
Tonics and Sedatives....Adv. page 24
Tonsillectomy vs. heart disease....ab-1573
Tonsils, bacteriologic examination....ab-1579
Toxemia of intestinal obstruction....*1529
Toxin-Antitoxin, contaminated, deaths from E-1553
Toyama, Dr., death....1562
Trichinosis, sporadic, in man....ab-1585
Tuberculin reactions with fractions....ab-1576
Tuberculosis, in calves, prevention....ab-1580
Hodgkin's disease and....1563
in orientals ab-1576
miliary, in childhood ab-1574
pleural lesions in ab-1574
pulmonary, with cavity, life duration..ab-1574
sputum examinations in....ab-1574
Vernes' test in ab-1575
vitamin action of oleum jecoris in..ab-1574
Typhoid, atypical course....ab-1586
epidemic, clinical peculiarity....ab-1585
Ulna, fractures *1542
Ureter stricture complicates uterus cancer.*1537
Urethra injury, air diagnosis....*1548
Urinary Tract infections, Vincent's serum for 1560
Urine, lactosuria, detecting....C-1566
alkaline, in cystitis 1566
pentosuria, in child ab-1586
proteins of nephritis *1514
Uterus, cancer, data on....ab-1586
cancer, cystoscopy in....ab-1580
cancer, ureter stricture in....*1537
double, with one vagina....ab-1580
mixed tumors ab-1580
vs. oxytocin and vasopressin ab-1580
Vaccination, intradermal *1530
Vaccine, severity of reaction and effectiveness 1567
Vagina, mixed tumors....ab-1580
Vasopressin, action on uterus....ab-1580
Vincent's anticolibacillary serum....1560
Vitamin A, chemical reaction to....ab-1585
Vomiting in myocardial disease....*1521
Werner, F., a correction....C-1566
Wills, testamentary capacity and insane delusions Ml-1571
Workmen's Compensation Acts, eye, industrial blindness Ml-1571
Wrists, frames for taking roentgenograms.*1546

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THE TREATMENT OF LOBAR PNEUMONIA WITH REFINED SPECIFIC ANTIBACTERIAL SERUM *

WILLIAM H. PARK, M.D.
JESSE G. M. BULLOWA, M.D.
AND
MILTON B. ROSENBLÜTH, M.D.
NEW YORK

The treatment of lobar pneumonia with a specific antibacterial serum has been under discussion for many years. It is now the opinion of those having no recent experience with the antibacterial serum that it is somewhat useful in type I cases, of doubtful value in type II cases, and useless in type III and group IV cases. All are agreed that the large doses of crude serum necessary to give sufficient antibody are a serious disadvantage. Recent investigations, however, have given us a more favorable outlook.

Seven years ago, at a meeting of the Influenza Commission of the Metropolitan Life Insurance Company, it was decided to make a serious attempt to determine the value and limitations of refined antibacterial serum and to stimulate attempts to improve it. The active members of the commission, McCoy, Jordan, Rosenau, Frost and Park, differing in their views from skepticism to optimism, were thought to be a suitable group for properly appraising the value of the serum.

Because of its large available material, Bellevue Hospital in New York was chosen as the main center for the test. Dr. McCoy assigned Dr. Cecil from the U. S. Public Health Service to take charge of the details of the investigations. The active cooperation of the attending physicians was readily obtained. The Cornell University Medical College assigned a portion of its laboratory for the pneumonia investigations. The cases of pneumonia were scattered throughout the wards of the four medical services.

The antibody solution prepared by Huntoon was chosen for the test and was supplied to the commission without charge. After three years of trial it was decided that, while its potency for types I and II was good, the chills and hyperpyrexia frequently caused by this antibody solution were too severe to make its further use in the hospital desirable. We therefore adopted the refined antibody solution which had just been prepared by Felton working under Rosenau at Harvard University. During the past three years Felton has greatly modified and improved his methods of eliminating inert and deleterious substances. For two years he has made a dependable product which retains almost the full strength of the serum antibodies of the original serum, with but little protein and almost no lipoid. At present 90 per cent of his preparations produce neither chill nor serum sickness and the other preparations produce reactions in only about 10 per cent of the patients. In 5 per cent of the cases slight allergic reactions develop, such as restlessness and moderate dyspnea, which soon pass off.

The results of the use of Felton's serum at Bellevue Hospital were recently reported by Dr. Cecil. The material which we are to consider in detail in this paper is that studied at Harlem Hospital where, owing to the generosity of Mr. Lucius N. Littauer and the cooperation of Dr. Lewis K. Neff, the medical director, it was possible two years ago to establish a separate pneumonia service under Drs. Bullowa and Rosenblüth. A resident physician and a staff of four bacteriologists and two chemists gave their full time to the investigations. This special staff and the large number of pneumonia patients made the conditions for evaluating the serum ideal.

The antibody solution used in these investigations was in major part prepared by Felton. Banzhaf and Sobotka of the health department and the Littauer Fund of New York University prepared antibody, using methods of precipitation and refinement different from Felton's. Their preparations are not yet as uniformly free of chill-producing substances as Felton's but have recently become sufficiently dependable for routine use.

All patients with lobar pneumonia admitted to Harlem Hospital receive identical treatment except that alternate patients are given serum. In order to compare cases of like severity, a system of numerical rating was devised which has been referred to elsewhere.[1] Blood cultures are taken immediately in all cases and sputum is collected as soon as possible for typing. The patients who are given serum receive doses of polyvalent serum containing approximately 10,000 units of type I and 10,000 units of type II and a much smaller amount of type III. These doses are repeated every eight hours while the temperature is above 102 F. As soon as the type is determined, the polyvalent serum is replaced by the appropriate monovalent serum. The nursing is the routine nursing of a municipal hospital with crowded wards. The patients were for the most part colored, with a high percentage of South and Central Americans recently domiciled in the city.

Except for the serum, the treatment of all patients is identical. This standard treatment stresses certain fea-

* From the Research Laboratory, New York Department of Health, and the Harlem Hospital, Medical Service, Lewis K. Neff, director.

* Read before the Section on Practice of Medicine at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

* The investigation received financial support from the Littauer Pneumonia Fund, New York University, and the Influenza Commission Fund, Metropolitan Life Insurance Company.

1. Park, W. H., and Cooper, Georgia: Antipneumococcus Serum in Lobar Pneumonia, J. A. M. A. **90**: 1349 (April 28) 1928. Rosenblüth, M. B.: Relation of Bacteremia in Lobar Pneumonia to Prognosis and Therapy, ibid., p. 1351. Bullowa, J. G. M.: Use of Antipneumococcic Refined Serum in Lobar Pneumonia, ibid. p. 1354.

tures: (1) adequate fluids up to 3,000 cc. daily; (2) no drastic catharsis; (3) restriction of the use of opiates; (4) relief of pleuritic pain by strapping with elastic adhesive plaster; (5) rapid digitalization for pulse rates over 120; (6) oxygen by tent or nasal catheter for cyanosis or rapid breathing.

Before commenting on the results in the 793 cases treated during the past two years in the Harlem Hospital, we believe it essential to consider a few tech-

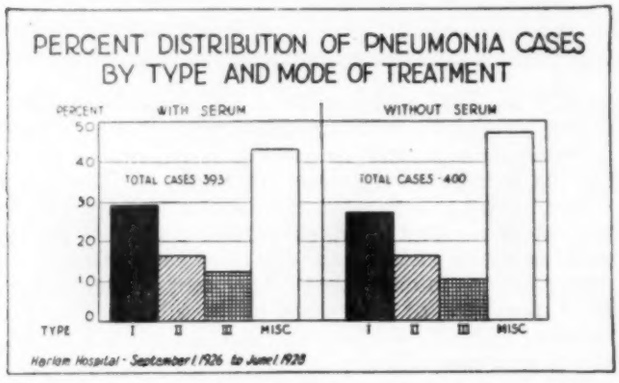

Chart 1.—Percentage distribution of pneumonia cases by type and mode of treatment in the Harlem Hospital from Sept. 1, 1926, to June 1, 1928.

nical points of vital importance in judging the present and future prospects of the use of serum antibodies in cases of pneumonia. It is well known that the pneumococci belong to different types and that it is necessary to match the infecting type in the case with its specific antibody. It is also necessary that the specific antibody be given in sufficient amount. At present only about 60 per cent of the pneumococci which cause pneumonia have been classified into types. The remaining 40 per cent are therefore unsuitable for serum treatment. This is one of the great drawbacks to the use of the antibody treatment. But this objection is now being lessened. Miss Cooper in the laboratory of the health department has discovered that more than 50 per cent of the pneumococci belonging to the miscellaneous group (group IV) fall into ten additional types, each of which is just as distinct as is type I, II or III, and each of which makes in animals a type specific antiserum. She did this by injecting a large number of rabbits each with a different one of a large number of group IV strains and then testing 120 strains against these immune serums. She regards atypical type II and atypical type III strains as belonging in group IV. These group IV strains were sent her from a number of hospitals.

The separation of a new type from pneumococci thought to be type III strains came about in a very interesting way. A study of the relation of freshly isolated type III strains to their antiserum was begun because concentrated refined antibody apparently of high titer as estimated by protection tests in mice against our virulent type III stock culture did not give the expected therapeutic results in the treatment of cases of type III pneumonia. Freshly isolated strains from cases, including some which failed to respond to serum treatment, were studied, and we were greatly disappointed to find that a type III antibody preparation which had 1,000 protective units per cubic centimeter against the type III stock strain had against freshly isolated strains only from 10 to 50 units. This failure to protect is believed by us to be due in part to the larger amount of capsular substance which these strains possess when in the body tissues or when freshly isolated. Miss Cooper also found these pneumococci with large capsules less suitable for the stimulation of antibodies. This disappointing discovery was offset by another encouraging one. Five strains were studied by Miss Cooper which agglutinated well in type III diagnostic serum but less well than typical type III strains. The agglutination was smaller in quantity in the lower dilutions and the floccules smaller in size in the higher dilutions. The titer was from one-fourth to one-half that of the typical strains. Three of the five strains had been classified at the Harlem Hospital as type III and two as probably of the miscellaneous or group IV type. Monovalent specific antiserums were prepared for the stock strains and two of the atypical strains. The antiserum for the stock type III strains which had 25 protective units per cubic centimeter against the freshly isolated typical type III strain did not show any protection against these atypical strains. An antiserum developed in the rabbit by injecting one of the atypical strains had 500 protective units per cubic centimeter against the atypical strains and only 1 unit per cubic centimeter against the freshly isolated type III strain.

The cross protection between the typical III strains and atypical strains is so slight that to include them in the same group seems unwarranted. Apparently effective antibody treatment in pneumonia as a result of these atypical type III strains could be carried out only with antiserum in which specific antibodies for this type had been developed.

The value of knowing that more than 50 per cent of the unclassified pneumococci belong to ten additional types is that we may now be enabled to produce specific protective antibodies against all these types and combine them as a polyvalent antibody. We are now injecting horses with them. We have already produced in horses potent specific antiserums against four of the new types. We hope finally to produce a polyvalent serum containing specific antibodies against all the thirteen types, so that it will be possible for the physician

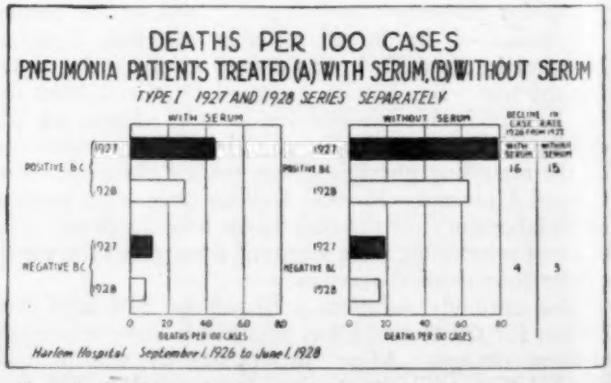

Chart 2.—Deaths per hundred cases in patients with type I pneumonia treated with and without serum in the Harlem Hospital from Sept. 1, 1926, to June 1, 1928; 1927 and 1928 series separately.

who does not have access to laboratories to treat his patients successfully without having the infecting pneumococcus typed.

There are a few points still necessary to touch on before the results of the treatment of pneumonia with the specific serum are discussed. In a previous paper [2]

2. Park, W. H., and Cooper, Georgia: Studies on the Leukocytes in Lobar Pneumonia: The Possibility of Rendering the Blood of Cases of Types I and II Lobar Pneumonia Antibacterial by Injections of Antibody Solutions, Tr. Sect. Path. & Physiol., A. M. A., 1927, p. 117.

we gave the results of tests showing that, in patients having type I pneumonia, the blood had only a moderate amount of soluble specific substance, while in those with type II infection there was sometimes a very large amount. This explained why in every case of type I pneumonia which we treated we were able to show free antibody in the blood soon after the treatment was begun, while in the late severe type II cases that was frequently not the case. This finding indicated that it was very important to give early treatment to persons with type II pneumonia and to give them more antibody than those with type I, and that in late severe cases of type II it may be impossible to give enough.

TABLE 1.—*Deaths per Hundred Cases in Pneumonia Patients Treated With Serum and Without Serum*

Experience of Harlem Hospital from Sept. 1, 1926, to June 1, 1928; 1926-1927 and 1927-1928 Series Separately

	With Serum			Without Serum		
	Cases	Deaths	Deaths per Hundred Cases	Cases	Deaths	Deaths per Hundred Cases
Type I						
Total cases *						
1927-1928	109	18	17	105†	33	31
1928	54	8	15	52	15	29
1927	55	10	18	53	18	34
Positive blood culture						
1927-1928	28	10	36	28	20	71
1928	17	5	29	14	9	64
1927	11	5	45	14	11	79
Negative blood culture						
1927-1928	80	8	10	74	13	18
1928	37	3	8	38	6	16
1927	43	5	12	36	7	19
Type II						
Total cases						
1927-1928	56	13	23	61†	18	30
1928	30	7	23	23	4	17
1927	26	6	23	38	14	37
Positive blood culture						
1927-1928	14	7	50	11	9	82
1928	9	4	44	1	..	..
1927	5	3	60	10	9	90
Negative blood culture						
1927-1928	42	6	14	47	9	19
1928	21	3	14	22	4	18
1927	21	3	14	25	5	20

* No blood culture was made in one case.
† Blood cultures were not made in three cases.

The last point we wish to emphasize is the importance of having not only a polyvalent antibody solution but one in which the strength of antibody for the different types is approximately known. Without this knowledge we shall be ignorant as to whether we are giving the desired amount of specific antibodies in any case of pneumonia we are treating.

RESULTS OBTAINED IN THE HARLEM HOSPITAL FROM THE USE OF THE ANTIBODY SOLUTION

Because of the importance of treating patients at the earliest moment it was impracticable to alternate them by type, since often at least twelve hours would have been lost before this was determined. Patients were therefore taken alternately for antibody treatment or control, depending only on the order of their admission to the service. It was believed that with a sufficiently large series the distribution of cases by type would be equalized between the treated and the untreated group. That this actually has been the case is seen in chart 1, which shows the percentage distribution by type in the two groups.

In two recent papers,[3] we reported the results obtained with the use of refined serum in the treatment of type I and type II lobar pneumonia during the first year of its use. In the present paper we bring our own statistics up to date, analyze them further, and combine them with those from Bellevue and New York hospitals.

The invalidity of using the statistics of one year to control those of another year is shown in table 1 and chart 2. It will be seen there that in using type I cases we were able to demonstrate a diminished death rate during the season of 1928 from that of the season of 1927, in both the treated and the untreated cases, irrespective of the presence or absence of septicemia.

The table of the combined series (table 2) shows in type I cases at Bellevue Hospital a ratio of difference in case fatality to error of 2.6, while at the Harlem Hospital the figure was 2.4. When these statistics are combined and the figures from the New York Hospital are included, this ratio becomes 3.7. The New York Hospital figures are too small for separate statistical valuation. Since statisticians regard a ratio of difference for standard error of 2 as significant, the combined figure of almost double this is very impressive. It is important also to note the effect which increasing the size of the series has on raising the ratio and thus rendering more valid the appraisal of the therapeutic result.

In type II pneumonia the figures for Bellevue Hospital are significant but the combined experience is less so, because at the Harlem Hospital there was less difference in the serum and nonserum series. It should be noted that the death rate in the patients treated with serum at Harlem Hospital was less than at Bellevue Hospital—30 per cent as against 39 per cent—whereas in the untreated cases the death rate at Bellevue Hospital was 53 per cent, and at Harlem Hospital 32 per cent. The death rate for the untreated cases at Harlem was less than that of the treated cases at Bellevue. It chanced that in the season of 1928 there was only one bacteremic patient in the nonserum group at Harlem Hospital, whereas there were nine in the serum treated group there. This is another evidence of the value of serum in the bacteremic cases and also of the need of a large number of cases to make the series comparable.

TABLE 2.—*Deaths per Hundred Cases in Patients with Lobar Pneumonia Treated With Serum and Without Serum*

Experience of Bellevue, Harlem and New York Hospitals, 1927-1928

Type	Cases	Deaths	Deaths per Hundred Cases		Cases	Deaths	Deaths per Hundred Cases		Difference in Case Fatality (A-B)	Ratio of Difference to Its Error
Type I										
Combined experience	266	51	19	2.4	249	82	33	3.0	14	3.8	3.7
Bellevue Hospital	144	27	19	3.3	132	43	33	4.1	14	5.3	2.6
Harlem Hospital	114	23	20	3.7	109	37	34	4.5	14	5.8	2.4
New York Hospital	8	1	(13)		8	2	(25)		..	...	...
Type II										
Combined experience	176	61	35	3.6	165	74	45	3.9	10	5.3	1.9
Bellevue Hospital	107	42	39	4.7	95	50	53	5.1	14	6.9	2.0
Harlem Hospital	61	18	30	5.9	63	20	32	5.0	2	8.3	.2
Type III										
Combined experience	82	27	33	5.2	92	27	29	4.7	4	7.0	.6
Bellevue Hospital	32	12	38	8.6	52	14	27	6.2	11	10.6	1.0
Harlem Hospital	47	15	32	6.8	38	12	32	7.6	0	10.2	...
New York Hospital	3	..	..	...	2	1	(50)		..	....	..
Miscellaneous types										
Combined experience	313	76	24	2.4	324	83	25	2.4	2	3.4	.6
Bellevue Hospital	131	39	30	4.0	128	51	40	3.3	10	5.2	2.0
Harlem Hospital	171	35	20	3.1	190	28	15	2.6	5	4.0	1.8
New York Hospital	11	2	(18)		6	4	(67)		..	....	...

In chart 4 the cases, all of which are type I (the combined results are shown graphically in chart 3), are considered according to the severity rating which

3. Park and Cooper (footnote 1). Rosenblüth (footnote 1).

was given to each on admission. Three groups were formed on the basis of whether the patient's condition was regarded as poor, fair or good. This was done in order that cases that were treated might be controlled by cases of like severity. In the "poor" group (rating less than 50) all the patients who were untreated died, whereas in the treated patients 64 per cent died—a difference in case fatality of 36. In this group the ratio of difference in case fatality to the standard error was 2.5.

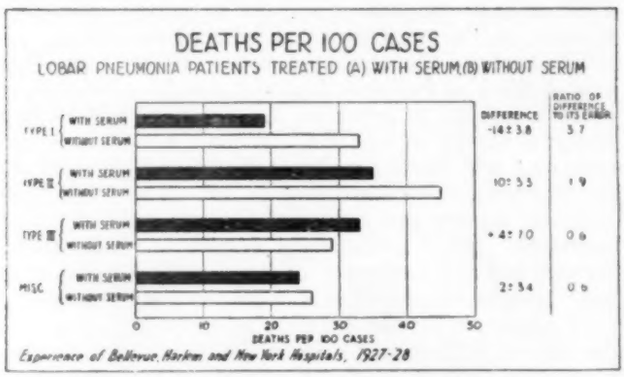

Chart 3.—Deaths per hundred cases in patients with lobar pneumonia treated with and without serum in Bellevue, Harlem and New York hospitals from 1927 to 1928.

In the "fair" group (rating from 70 to 50) 52 per cent of the patients without serum died, whereas 29 per cent of the treated patients died, a difference in the case fatality of 23.

In the "good" group (above 70) 13 per cent of the untreated patients died, whereas 9 per cent of those treated died, a difference in case fatality of 4.

It would appear, then, that the serum exerts its greatest effect in grave cases. This is probably because the incidence of bacteremia is greatest in such cases. Table 2 bears out this assumption.

Chart 5 separates patients into those with positive blood cultures and those with negative blood cultures. All type I and type II cases are included. In type I patients with positive blood cultures, 36 per cent of those treated with serum died, whereas 7 per cent of the untreated patients died. In those with negative blood cultures, 10 per cent treated with serum died, whereas 18 per cent of the untreated patients died.

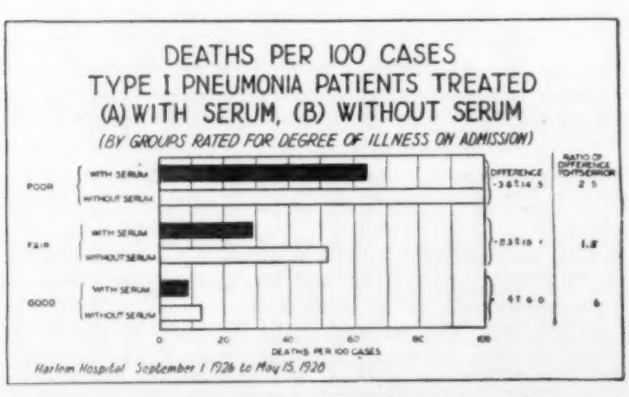

Chart 4.—Deaths per hundred cases in patients with type I pneumonia treated with and without serum by groups, rated for degree of illness on admission, in the Harlem Hospital from Sept. 1, 1926, to May 15, 1928.

In type II patients with positive blood cultures 50 per cent of those treated died, whereas 82 per cent of those not treated died.

In the type II patients with negative blood cultures 14 per cent of those treated died, whereas 19 per cent of those not treated died.

It is obvious from these figures that the serum is most needed in patients with bacteremia. This cannot be determined by clinical observation and, in order to treat such patients promptly, those chosen for treatment have had serum administered immediately after the blood was taken for a culture.

SUMMARY AND CONCLUSIONS

The fact that the introduction of a therapeutic dose of type I antibody solution into the vein of a pneumonia patient infected with the type I pneumococcus neutralizes all the soluble specific substance and leaves in the blood an excess of antibody would lead us to hope that its use would have a beneficial effect in lobar pneumonia. The lessened mortality of 42 per cent in lobar pneumonia at Harlem Hospital in a large series of cases treated with antibody, as contrasted with those untreated, is so great that, with the support of recent similar results at the Bellevue and New York hospitals, we consider that the value of the antibody in the treatment of type I cases of lobar pneumonia is proved.

When in a therapeutic test the ratio of difference in case fatality to its standard error is as great as 3.7, it is considered by expert statisticians to be conclusive proof.

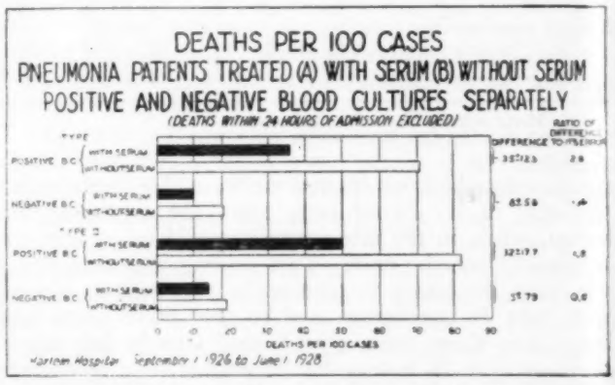
DEATHS PER 100 CASES
PNEUMONIA PATIENTS TREATED (A) WITH SERUM (B) WITHOUT SERUM
POSITIVE AND NEGATIVE BLOOD CULTURES SEPARATELY
(DEATHS WITHIN 24 HOURS OF ADMISSION EXCLUDED)
TYPE I
TYPE II
POSITIVE B.C.
NEGATIVE B.C.
WITH SERUM
WITHOUT SERUM
DIFFERENCE
RATIO OF DIFFERENCE TO ITS ERROR
DEATHS PER 100 CASES
Harlem Hospital September 1 1926 to June 1 1928

Chart 5.—Deaths per hundred cases in pneumonia patients treated with and without serum. The results in those with positive and negative blood cultures are shown separately. Deaths within twenty-four hours of admission are excluded.

In lobar pneumonia caused by type II pneumococci, we found that only in early cases would an ordinary therapeutic dose of antibody surely neutralize all the soluble type II specific substance. In late severe cases, especially those showing bacteremia, even repeated doses sometimes failed to do so. In the early cases, even when bacteremia had developed, the results were usually strikingly good. The mortality for the two years was 22 per cent less in the treated than in the untreated cases, and the ratio of difference in case fatality to the standard error was 1.9. While the evidence of the value of type II antibody is not as overwhelming as in the case of type I antibody, we believe that it is of very great value, especially if it is given early in the disease.

In the type III cases the specific antibody had only a slight effect in neutralizing the specific soluble substance and the therapeutic results were very slight, if any. Probably because of the excessive capsules which type III pneumococci have in or when freshly isolated from the body, the antibody has much less effect on freshly isolated than on virulent stock cultures. There is also another reason in that a fair proportion of sup-

posed type III pneumococci are a subtype which really belong to the miscellaneous (IV) group, just as do the subtypes A and B of type II. These pneumococci are influenced only slightly by specific type III or specific type II antibody, but are influenced strongly by their own specific antibody.

More than 50 per cent of the miscellaneous or group IV pneumococci, which form about 40 per cent of the whole, have been split up by Miss Cooper into ten types which are just as distinct from each other as are types I, II and III. We have prepared potent antibody for the majority of these and hope we can prepare a polyvalent antibody solution for them.

The results of the work of Felton, and to a lesser extent of Banzhaf and Sobotka, have put at our disposal a potent refined antibody solution for types I and II which has no apparent deleterious effect in the majority of persons suffering from lobar pneumonia and which has a potency of from five to ten times that of the unrefined serum. When horses are selected which produce a highly potent polyvalent serum, the first refined product has a very high titer. We are now able therefore to benefit about 50 per cent of the patients without accompanying deleterious effects. If our attempts to develop an antibody solution for one half of the group IV patients succeed, we shall be able by adding this to the polyvalent type I and II antibody to treat hopefully 70 per cent of all cases. The fact that it is the cases of bacteremia which apparently show the greatest improvement from the antibody solution is strong evidence of its value. The time has arrived when the biologic plants should undertake the production of the refined polyvalent pneumococcus antibody solution by the method of Felton or that of Banzhaf, or by a better one if it can be developed.

The Hygienic Laboratory should insist that the potency of the antibody solution be clearly stated for the different types for which the preparation is offered.

ABSTRACT OF DISCUSSION

DR. RUSSELL L. CECIL, New York: The serum with which we have been working in the treatment of pneumonia is not an antitoxin. It is an antibacterial serum which we give in the hope of helping nature overcome the pneumococci in the blood. The pneumonia patient who dies is usually septic, and the object of serum treatment is to produce an antibacterial rather than an antitoxic effect. During the past two years we have treated about 450 cases with an equal number of controls. The serum was always given as soon as the diagnosis was made without waiting for the type, but typing was done in every case by the mouse method. Our death rate in 150 type I cases treated was cut to about one-half that for an equal number of controls. In the type II group, 100 treated cases showed a death rate 25 per cent lower than that of the controls. In the type III and the type IV groups, there was very little to be seen as far as therapeutic effect was concerned. We have been successful in treating monkeys with this concentrated serum. Concentrated serum even in small amounts controls otherwise fatal pneumonia in monkeys, both in type I and type II infections. After a number of years of experience with these various specific agents for the treatment of pneumonia, we feel that in Felton's serum we have the best product that we have so far used. It is polyvalent. It is also highly potent, so that doses of from 10 to 20 cc. are equivalent to several hundred cubic centimeters of the old standard serums, and potency is needed, because we are dealing with a massive infection. How different the pneumonic lung is from the small foci of infection present in diphtheria and scarlet fever. We need a great deal of help for the patient because of the size of the infection. Felton's serum is a stable product. It keeps well. Another advantage is that reactions are rare. We have encountered two kinds of reactions, thermal and allergic. The thermal reactions are nothing more than foreign protein reactions, a chill with a rise in temperature. It has occurred in about 10 per cent of our cases but has been confined largely to certain lots of serum. Even when the chill does occur, it is not of a severe nature. The allergic reactions have been much less frequent than with regular serum because there is less protein injected. Serum sickness occurred in 15 per cent of cases and was never very severe. Felton's serum is efficacious. We have great hopes for this product.

DR. WILLIAM H. ROBEY, Boston: We have used the antibody solution for four years under the direction of Dr. Park and the pneumonia commission. The incidence of pneumonia is lower in Boston than in New York, and it is decreasing. We had seventy treated cases and seventy untreated cases, all type I, and all treated within the first three days. The mortality in those two groups was exactly the same. This failure has led to the abandonment to a certain extent of typing. In fact, typing is so little required by the physicians of the state of Massachusetts that the state board of health is considering giving up the opportunities for typing. Our treatment of cases at the Boston City Hospital, although in much smaller numbers, corresponds very nearly with the results of Drs. Park and Bullowa at the Harlem Hospital and of Dr. Cecil at Bellevue Hospital. Our results in using Felton's serum in cases treated during the first four days of the disease were as follows: In the type I group, among thirty-one cases, there was one death, a mortality of 3.2 per cent. Among twenty-six untreated cases, there were eight deaths, a mortality of 30.7 per cent. In the type II group, there were twenty treated cases with five deaths, a mortality of 25 per cent, and twelve cases untreated, with three deaths, a mortality of 25 per cent. In the type II group, there were four cases with one death, a 25 per cent mortality; among seven untreated cases there was one death, or 14.3 per cent mortality. In type IV, there were thirty-one cases with a mortality of 6.4 per cent, and twenty-nine untreated cases with a mortality of 17.2 per cent. Twenty patients were seen and treated after the first four days in the type I group, with a mortality of 30 per cent; in thirty-three untreated cases there was a mortality of 18.2 per cent. One of the most striking features in our observations is that in the cases of more than four days' duration, or particularly more than three days, it is almost impossible to reduce the bacteremia. In type 2, the mortality was extremely high; namely, fourteen cases treated, with a mortality of 35.7 per cent; in the untreated cases the mortality was 38.8 per cent. In type 3, there were five cases and one death, a mortality of 20 per cent, and eleven cases untreated with seven deaths, a mortality of 26.6 per cent. In type IV, there were thirty cases, with three deaths, a mortality of 10 per cent, and forty-five untreated cases, with seven deaths, 15.5 per cent mortality. In other words, our greatest results are in the type I cases treated within the first three days. Our next best results, which are more favorable than with any former treatment, are in type II cases. In types III and IV, we naturally feel that no result has occurred.

DR. W. H. PARK, New York: The potency of an antiserum depends on the reaction of the individual horse and the nature and the method of using the antigen. Its polyvalence depends on the number of antigens used. It may be interesting to know that at least two biologic plants have become so much interested in the antibody studies that they are planning to produce the pneumonia antiserum in large quantities and hope to have refined polyvalent serum that will not produce chills on the market in the fall. I am not sure that they will succeed, but the serum will be tested out thoroughly before it is put on the market. With regard to the treatment of early and late cases, we felt very strongly, as Dr. Tobey did, that only early cases should be treated, until about a year ago, when, because of animal tests, we felt more hopeful and began to give large doses of antibody in cases seen on the fourth, fifth or sixth day. A number of these patients who had shown a slight bacteremia recovered after the use of the antiserum. Our statistics for the last year are quite a little better for the late cases which were treated than for those left untreated. This was especially true for type I cases but also to a lesser degree for type II. While, therefore, we should try our best to treat the cases early with antibody, we should not withhold large doses

of serum from type I and type II patients who come for treatment rather late in the attack, if they are not too desperately ill. As Dr. Robey said, it is very difficult to draw accurate conclusions with small numbers. For instance, this year at Harlem Hospital there was almost the same mortality in our treated type II cases as in the untreated cases. It just happened this year that every case of type II bacteremia was on the treated side. When we put the figures for the two years together, the mortality for the treated cases was much better. We believe that the total cases reported from the three hospitals give us a sufficiently large number of cases to estimate the value of the antibody solution.

TINNITUS AURIUM

ITS INCIDENCE IN ENDOCRINE DISORDERS *

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BOSTON

In tinnitus aurium there is a close relation between the character of subjective noise and the underlying cause. Treatment is unfavorable when the noises do not vary in intensity and are continuous, is less so when they vary and are intermittent, and is favorable when they are altered or relieved by inflation. Analysis of 1,000 cases studied at the Evans Memorial, 585 of which were demonstrably endocrine, showed an incidence of tinnitus in 35.6 per cent of the endocrine cases and 32.7 per cent in the nonendocrine cases. Further analysis of the nonendocrine group showed an appreciable percentage of diseases in which tinnitus is a characteristic or frequent symptom. It is concluded that while tinnitus aurium is not a characteristic symptom of ductless glandular disorders, it is encountered equally often in hypofunction of all the endocrine glands.

Tinnitus aurium is a term employed to designate certain subjective sensations of ringing, roaring, ticking and whirring noises in the ear. It is a very common and often a distressing symptom. In fact, of all the symptoms which an aurist is called on to relieve, tinnitus is the most elusive and the most difficult to control. It may be caused by any form of tympanic or labyrinthine disease, and may result from other conditions not dependent on disease of the auditory apparatus. Again, we may cure the ear condition but absolutely fail to control the remaining tinnitus aurium.

A high pitched tinnitus (singing, hissing, chirping) indicates increased tension in the middle ear and is due to pressure on the stapes, active or passive hyperemia, or acute or chronic catarrh. A low pitched tinnitus (rushing, humming, shell-like) is usually vascular or muscular, and is especially perceptible when the resonance is increased by cerumen, collections of mucus or polypi. When pulsating, it is due to arterial congestion of the middle ear or labyrinth. Pulsating tinnitus is more frequent than patients would lead one to believe from their descriptions.

When relieved by pressure on the carotid artery, the congestion may be localized, as in the middle ear; when pressure on the vertebral artery (made by digital compression over the suboccipital triangle) diminishes the congestion, the internal ear is probably the part affected. Pulsating tinnitus is due very often to abnormal conditions of the ear, by which the pulsations of the heart or arteries, usually inaudible, become apprehensible. Although cases have been recorded in this connection wherein the tinnitus was audible, it should be remembered that the murmur of a thoracic aneurysm may be heard by the sufferer with distressing acuteness. A rushing tinnitus is due usually to venous congestion, is worse on lying down, and may be relieved by purgation. Deep humming, which is lessened on assuming the recumbent position or on taking food, is dependent on anemia. Scraping, crackling, rattling and gurgling are usually due to the movements of exudates in the middle ear.

It must be borne in mind that tinnitus may occur independently of ear disease, and the latter can be excluded only by a careful and thorough examination of the organ of hearing. It may be noted here that when tinnitus is persistent and out of all proportion to the ear condition, the urine should be examined for albumin and casts. Finally, in investigating cases of tinnitus, inquiry should always be made as to the period, in relation to other symptoms, at which the noises appeared.

In the great majority of cases, subjective noises are localized in the ear itself, but in many instances they are experienced within the head, in the occiput, in the temporal region or on the vertex. Intense noises, which occur in paroxysms, often extend from the ear to the inner portion of the head, and spread sometimes to the frontal and sometimes to the occipital region. It rarely happens that the sensation of sound is projected outward. This is especially the case, however, in the beginning of the disease when the subjective sensations are erroneously mistaken for objective noises, until experience corrects this phenomenon and rectifies the false conception.

Frequently only one kind of subjective noise is heard; occasionally, however, they change, or the most varied kinds of noises are perceived simultaneously. The intensity of the subjective noises is seldom uniform, and there are usually marked variations, which depend on the disease process itself but more often on external influences or on physical conditions.

Some of the external influences which produce an increase in the subjective noises are changes of weather and confinement in close, damp or smoky rooms. In the open air the noises are less annoying. Marked tinnitus is often forgotten because of diversion and occupation, which explains why many persons do not hear the noises during the day, while they become distinctly audible by closure of the external ear canal in quiet rooms and at night before going to sleep. Marked objective noises often overshadow the subjective ones so completely that persons on trains and in noisy rooms do not perceive the intense ringing in the ears. This, however, makes the latter appear so much the louder when the environment becomes quiet again. I have seen persons, however, who still heard subjective noises in the midst of the greatest uproar, while riding in the train and while listening to the performance of an orchestra.

It is frequently noticed that subjective noises are often produced or permanently increased by a temporary alteration of the condition of the general system. Bodily and mental exertions, conditions of the mind (epilepsy, in which the noise in the head may precede a seizure), continuance in a stooping position, excessive talking, coughing and sneezing, movements of the jaw in chewing, turning and shaking the head, sleeplessness or too much sleep, smoking, overeating, pregnancy and, in fact, all things which tend to produce an irritation

* Contributions from the Evans Memorial, Number 164, A-92.
* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

to the nervous system, usually increase the tinnitus in an astonishing manner. Noises that are not even very intense are especially annoying to hysterical and neurasthenic persons.

Subjective sensations of hearing may be either intermittent or continuous. The continuous noises may either begin as such or they may develop from the intermittent ones, as the intervals which were considerable at the beginning gradually disappear. In some patients they produce unbearable torture, which may reach such a degree that the patients are driven to suicide. Others gradually become accustomed to these sensations, which were so annoying at the beginning. On the other hand, subjective noises become more endurable when there is a healthy condition of the body, when the mind is at rest, or in persons who have a happy disposition, and in pleasant, clear weather.

TABLE 1.—*Observations in Endocrine Group*

Diagnostic Group	Total Number	With Tinnitus	Per Cent
Pituitary	289	105	36
Thyroid	148	50	34
Gonad	119	43	36
Suprarenal	12	3	25
Pancreas	4	1	25
Pluriglandular	13	5	38
Nonendocrine	415	135	32

It must still be mentioned, however, that in a number of cases the intensity of the noises increases with that of the disturbance of hearing; in others the noises cease with the deafness, while in other cases they continue to increase after the loss of the hearing power. Attention must still be called to the fact that these diseases of the labyrinth and auditory nerve, which are most severe clinically, may often run their course without any subjective noises.

That form of subjective noise must be regarded as a pure neurosis which is designated as nervous tinnitus or ringing in the ears without difficulty in hearing. It occurs mostly in excitable, nervous persons, after exertions of the mind, from grief, in exhausted conditions, with anemia, after parturition, after a shock of sound, and occasionally also in persons who are in a perfectly normal state of health. Coexistent sensitiveness to light and disturbances in other nerves point toward a central disease. The patients most frequently complain of ringing, hissing and buzzing in the ear; still, the noises seldom reach such an intensity as those accompanying chronic adhesive processes or in otosclerosis. In the latter disease the tinnitus oftentimes precedes the deafness, later on disappearing.

The present paper offers the results of the investigation into the relative incidence of tinnitus in disorders of the endocrine system. The report is based on the analysis of 1,000 consecutive cases received at the Evans Memorial for diagnostic study, all of which presented stigmas of possible endocrine disease. The methods of analysis have been described elsewhere in detail,[1] and in brief may be said to comprise the interpretative collation of results from thorough and comprehensive clinical and laboratory observations.

Of the 1,000 patients examined, 585, or 59 per cent, gave sufficient evidence of deranged metabolic activity to justify the diagnosis of a probable endocrine malfunction, while 415, or 42 per cent, presented a primary pathologic condition that was nonendocrine in origin. The incidence of tinnitus as a chief complaint or prominent symptom is not widely different in the two groups, that of endocrine malfunction exhibiting 35.6 per cent positive cases, while the nonendocrine group shows 32.7 per cent. Detailed analysis, however, discloses certain points of interest. The endocrine data are given in table 1.

The percentage presenting positive indications is surprisingly uniform, the suprarenal and pancreas groups constituting the sole exceptions. Conceivably here the relatively small number of cases in these groups may be the cause of the deviation rather than any intrinsic property of the syndrome, except possibly the expected relationship between the suprarenal and the thyroid in the suprarenal group. Again, with the pluriglandular group the larger percentage may be due to the thyroid gland being involved in each of the five cases. The consideration of the nonendocrine portion supplements the foregoing. The allocation of these cases to certain broad diagnostic groups is given in table 2.

Only one of the group shows an incidence just below the average with that of the important endocrine units. The other groups are all noticeably higher. The exception has always been recognized as a major and characteristic feature; namely, toxemia.

The two highest group percentages are of interest as they both represent direct blood stream infection. The psychoses and central nervous lesions are on a par but do not directly involve the circulation. The possible reason for the miscellaneous group being rather larger than usual is that it contains a number of ear cases, as otosclerosis. It is of interest also that my former study of vertigo[2] gives exactly the same results regarding focal infections as was noted; namely, 26 per cent. On the other hand, I have observed that while possibly tinnitus bears a relationship to vertigo as three is to one in disease of the ear, generally all patients with vertigo also complain of tinnitus.

It is interesting to note that subjective sensations of hearing are occasionally produced reflexly from the trigeminus, and less often from the facial nerve; they are also experienced in cases of neuralgia and hemicrania. They must be looked on as reflex symptoms, especially if they arise during an attack of neuralgia, and again disappear after the attack has passed away. I have noticed also that subjective noises may be produced and existing sensations of hearing increased or diminished by irritation of the skin in the region of the ear which is innervated by the trigeminus; such irritations may be occasioned either by stroking the skin or in shaving.

TABLE 2.—*Observations in Nonendocrine Group*

Diagnostic Group	Total Number	With Tinnitus	Per Cent
Cardiorenal	47	24	51
Neuroses and psychoses	37	16	43
Syphilis	22	11	50
Focal infections	46	12	26
Lesions of the central nervous system	36	15	41
Miscellaneous	125	59	39

Nervous tinnitus may disappear sooner or later, but not infrequently it continues during the whole life of the patient without any disturbance of hearing. Sometimes, after a long observation, it proves to be the forerunner of a cerebral disease. This variety originates in the labyrinth or the brain. These diseases may be due to mental phenomena induced by ear disease; in such cases the noises are often of an elaborate char-

1. Rowe, A. W.: Boston M. & S. J. **190**: 291 (Feb. 21) 1924.

2. Drury, D. W.: Vertigo: Its Incidence in Endocrine Disorders, J. A. M. A. **87**: 26-29 (July 3) 1926.

acter, taking the form of words, sentences or musical sounds. In patients of neurotic temperament, especially in those whose mental condition is unstable, a slight tinnitus, originating in some middle ear condition and at first amenable to treatment, may become a nervous tinnitus and remain as a kind of fixed idea, leading to hallucinations and paranoia. It is safe to say that the tinnitus seen in neurasthenia is very variable; it changes from time to time and is always worse during fatigue and during attacks of anger or of the emotions. It is usually better in the morning but returns during the day with the symptoms of a marked depression.

In the treatment of subjective noises it is of the greatest importance first to ascertain the cause. The diet must be regulated accordingly, and in addition to this everything must be avoided that would increase the subjective sensations. A regular life, the avoidance of bodily and mental exertion, and a limited use of excitants have a decided influence in making the subjective noises become more bearable to the patient. When the cause is the heart, the tinnitus may be absolutely controlled by removing the aural lesion alone or by reducing the blood pressure to approximately normal or by doing both. It will be noted that in unilateral tinnitus the pressure is usually high, while in low pressure the tinnitus is usually bilateral. If in high pressure and the noise unilateral, it is usually noticed that it is on the side of the physical lesion, as in fractures of the base.

SUMMARY

1. Treatment is unfavorable when the noises do not vary and are continuous.
2. Treatment is less unfavorable when they vary in intensity and there is temporary cessation.
3. Treatment is favorable when they are altered or relieved by inflation.
4. When the noises are altered by rarefaction of the air in the meatus they are due to altered tension, admitting to treatment.
5. Tinnitus is due to either an increase or a decrease of labyrinth pressure, and with either increased or decreased blood pressure.
6. It is not a characteristic symptom in ductless glandular diseases, but is seen equally often in hypofunction of each of the endocrine glands.

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ABSTRACT OF DISCUSSION

DR. J. A. PRATT, Minneapolis: In 1918, my entrance thesis to the Minnesota Academy was entitled "A Treatment Study of Otosclerosis." I presented the hypothesis that hyposecretions of the ductless glands influenced bony metabolism and thus caused otosclerosis. The line of treatment would be to supply this deficiency until conditions would become favorable to an establishment of normal secretion, and in the meantime to find the cause of the hyposecretion. The correction of focal infections was recommended. A study of eighteen cases was presented which were treated with thyroid and suprarenal gland. Five of these patients were thrown into hyperthyroidism and would not continue the treatment. In the remaining thirteen cases the noises stopped in three, were better in three, and were unimproved in seven. Thirteen of the patients improved in hearing. We examined the records of ninety cases of otosclerosis. Thirty-nine of the patients did not return after the first examination. Of the remaining fifty-one who followed the prescribed line of treatment and had focal infections removed, twenty-four showed improvement of hearing, sixteen were holding their own, and eleven were unimproved or were worse. The records showed that the noises had stopped in three cases and improved in five. Neglect of asking the patient about the noises might account for the low percentage of improvement in noises. The present line of treatment is as follows: Nasal conditions are made as nearly normal as possible, and all focal infections removed. All other general deleterious conditions are corrected. Complications of catarrhal conditions of the middle ear are treated. The patient is started in with 2 grains (0.13 Gm.) of desiccated suprarenal gland tablets, three times a day, for the first two weeks, and then 1 grain (0.065 Gm.) three times a day. If there is a condition of hypothyroidism, the amount of thyroid needed to control it is given. As a general stimulant, 1/10 grain (6 mg.) of yellow mercurous iodide is given, three times a day, for one month. The suprarenal gland, being the mainstay, is given over a period of months and years. Great improvement of the general condition is invariably noted.

DR. G. F. HARKNESS, Davenport, Iowa: Dr. Drury's painstaking analysis of a large group of cases as related to the one symptom tinnitus deserves special commendation, because few clinicians are in a position to study patients suffering from endocrine disturbances in such numbers and therefore are unable to draw conclusions that are worth while. The profound influence of endocrines on life is established. The author has selected one symptom, tinnitus, and presented a classification that is clinically helpful. It may be aural or extra-aural; it may or may not be associated with deafness; it may or may not be associated with vertigo. Apparently, decreased or increased labyrinthine pressure may cause tinnitus. With all the aural conditions to which man is subject, there is a lack of consistency as to the occurrence of tinnitus. What it is that causes one individual to suffer from this annoying symptom and permits another to be free from it seems no nearer solution than when the problem interested our medical ancestors. The author states that tinnitus in diseases of the ear bears a relationship to vertigo of 3 to 1, while practically all patients with vertigo complain of tinnitus. Since his percentage of the incidence of vertigo and tinnitus is the same (26) in the two nonendocrine groups, as related to focal infections, I would ask him whether he has found the relation of tinnitus to vertigo in the focal infection group to maintain a ratio similar to that in aural disease, and, if so, whether it is possible to dismiss tinnitus without vertigo as being due to a focal lesion. Investigators in experimenting with glandular extracts have found that absorption takes place through the nasal mucous membrane, and have used this means when intravenous injection seemed inadvisable. The thought comes to me that difficulties of application and measuring of dosage in such experimental work in man might be overcome to a large extent by using the mucous membrane of the antrum of Highmore, the glandular extract being introduced by needle puncture. In the light of our present knowledge of the endocrine system, we can dismiss tinnitus as pointing toward a hypofunction, hyperfunction or dysfunction of these internal glands.

DR. WILLIAM ENGELBACH, St. Louis: As an internist I take great pleasure in absorbing the knowledge of internal secretions that the otolaryngologist has at hand. I will compare the observations in the nose and throat, and particularly in the ear, as far as I can recall them in a series of cases that now has reached between seven and eight thousand, in which the otologist has made a complete examination. In the first place, the percentages, I am sure, will be much lower in regard to any aural conditions in endocrine disorders. I am not sure as to the exact figures, but I feel confident that they will not be as high as 33 per cent, which I understood Dr. Drury to report. The next point that I believe we have proved, without knowing absolutely why, is that (with us) thyroids run a much higher percentage than any other one endocrine disorder. With regard to absolute knowledge in this line, I believe I may take this occasion to say a word along the clinical and biochemical development which gives us a positive understanding of the reason why aural conditions are present in some of the endocrine cases. Years ago, at the Congress on Internal Medicine, held in England, a symposium was devoted to Gull's disease, or myxedema. At that time the medical profession was confronted with a large number of aural conditions reported present in myxedema. Since that time thyroid substance has been used a good deal in the treatment of various chronic conditions of the ear, and a markedly favorable effect is observed in a number of cases. Auer and his co-workers have shown that

there is a marked decrease of calcium metabolism in myxedema. Since the ossicles of the deafened are calcified, since myxedema allows the storing of calcium on the bones and since thyroid medication causes decalcification of long bones, it might thus decalcify the sclerosed ossicles. Auer and his co-workers proved that ammonium chloride and parathyroid had the same effect as thyroid or calcium metabolism. I might suggest this line of investigation of the very young having retractable deafness. Possibly therapy directed toward a calcium deficiency might help these children.

DR. DANA W. DRURY, Boston: I did not intend to take up the question of treatment or to enter into a discussion of the endocrine problem. I would say, however, that I believe endocrine therapy should be a replacement therapy. It is difficult to get people who need the treatment to cooperate over a long enough time. This group was of 1,000 consecutive case histories. It contained more than 200 cases of otosclerosis. With this large number of sclerotic cases the percentage of tinnitus might be raised slightly over the ordinary run of cases.

THE CONSTITUTIONAL FACTORS IN HYPERTENSIVE DISEASE*

JOSEPH H. BARACH, M.D.
PITTSBURGH

While the clinician may be justified in laying the phenomenon of arterial hypertension at the door of the physiologist or pathologist, it is none the less incumbent on him to carry on his own investigations. When the real cause of hypertension is at last brought forth, it is the accumulated data of clinical investigation that will supply the background to prove or disprove the proposed ideas of the physiologist and pathologist.

Under existing conditions, we are impelled to continue our approach to this study by various avenues. Observation of objects from different angles at times reveals an entirely new perspective. With this in mind, one will find a great deal of interest in the study of hypertension, particularly essential hypertension as the manifestation of a constitutional tendency.

It may be commonplace, but it is true, that if we are to know disease we must first know man. And it is particularly true that if we are to know man we must follow him from the cradle to the grave. Since we have not yet come to the time when intelligent people keep health diaries, the clinical investigator is forced to gather his materials from the patient's verbal history. He knows that in these histories certain inaccuracies are inherent, and therefore he is forced into relying on his sense of discrimination in forming a pattern picture for analysis or synthesis. It is the patient who develops hypertension that is the objective of this study; it is not arterial hypertension as a disease which concerns us here.

The point of view that I present is based on observation in patients who have been under my care for from one to twenty years. Some of them I have come to know almost intimately. In many instances parents and children of these patients have also come under my care, and it is from this experience that I have gathered certain observations and impressions. These lead me to believe that a large proportion of patients showing arterial hypertension are destined to develop this condition because of an underlying hereditary tendency, and a pathologic continuity throughout their life cycle.

* Read before the Section on Practice of Medicine at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

HEREDITY

It is generally conceded that hereditary tendency plays a prominent rôle in the life history of patients with hypertension. In one group of cases in which I made an intensive study, nearly 95 per cent gave such a positive history. In a larger group, 231 cases, in which the history was obtained in a routine manner, a positive history was given by the patient in about 50 per cent.

INFECTIONS IN EARLY AND MIDDLE LIFE

The early life history of these patients indicates that upper respiratory infections were of common occurrence and that many carried diseased tonsils into middle life. This is illustrated in chart 1, which indicates the small number of tonsillectomies as compared to the number of tonsillectomies in another group of 1,530 patients.

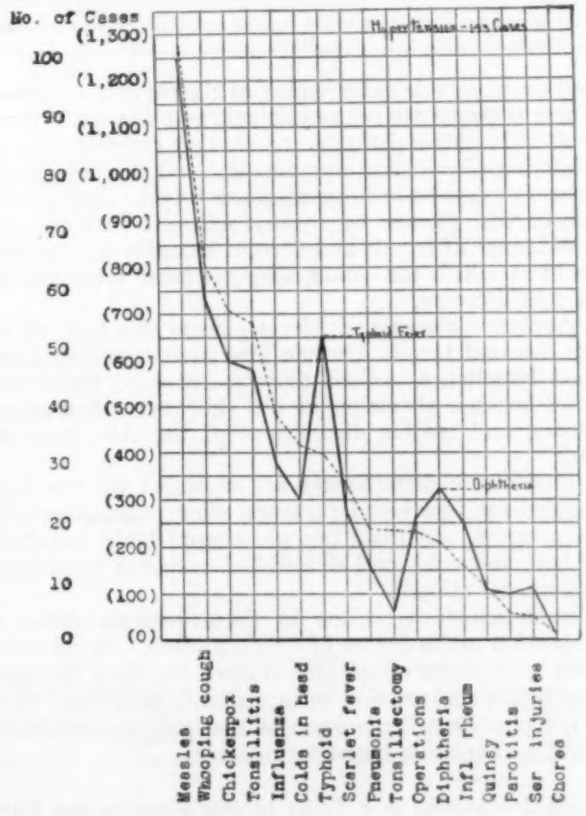

Chart 1.—Incidence of disease in 143 cases of hypertension compared with 1,530 other patients: broken line, all diseases; solid line, cases of hypertension.

One who is not fully aware of the profound disturbance that comes with the common acute infection I would remind of what happens in the way of temporary or even permanent damage to the dextrose tolerance of a diabetic patient with every acute cold and sore throat He will learn that in most cases dextrose tolerance for the time being falls to about half of its former value.

The history of patients with arterial hypertension also reveals the fact that they had suffered one of the severe acute infectious diseases. As indicated in chart 1, typhoid and diphtheria were the outstanding diseases in this series.

SYSTEMIC CHANGES

Family history and incidence of infection in the early life of these patients was the same in boys and girls up to the time of puberty. From that time on, male and female present different disease pictures. Either the glands of internal secretion are themselves involved

or, acting on an abnormal organism, they induce abnormal conditions. In either case, male and female present distinctly different clinical pictures.

IN THE FEMALE

In the girl, I find what I designated in 1921 as the tonsil thyroid syndrome.[1] Such relationship is now being emphasized by Else,[2] Sloan,[3] Cole and Womack[4] and others. At puberty, enlarged and diseased tonsils

TABLE 1.—*Reproductivity in Two Hundred and Thirty-One Cases*

Males, 101		Females, 130	
Unmarried	10	Unmarried	20
Married, no children	23	Married, no children	25
Married, 1 child	17	Married, 1 child	14
Married, 2 children	20	Married, 2 children	14

Average number of children to 130 married females, 1.3 children per family.
Average number of children to 101 married males, 1.1 children per family.

and demonstrable enlargement of the thyroid are found. These thyroids are not physiologic and they are not normal. If these patients are studied carefully certain anatomic, physiologic, immunologic and psychologic evidences of a disturbed organism are found. They present the clinical picture of dysthyroidism. This common coincidence of tonsils and thyroid accounts for the daily problem which the goiter surgeon must face, the one of tonsillectomy.

Anatomic changes visible in girls at this time of life are diseased tonsils, chronic pharyngitis, enlarged cervical lymphatics, colloid thyroids, obesity, abnormally large breasts, alteration in the skin and subcutaneous tissues, and trophic disturbance of the skin, hair and nails.

Physiologic disturbances are indicated by low basal metabolism, low blood pressure, slow pulse, menstrual disturbance, abnormal fatigue, altered body sensibility to heat and cold, and diminished response to physical and mental stimuli.

Immunologic reactions in these patients differ in proportion to the degree of dysthyroidism. Acute infections with slight or no temperature reactions are seen. The leukocytic reaction to infection is abnormal; there is a tendency to leukopenia, a low polymorphonuclear count and relative lymphocytosis.

TABLE 2.—*Coloring in a Series of One Hundred and Fifty-Seven Cases of Hypertension*

Male, 62		Female, 95	
Light	49	Light	64
Dark	13	Dark	31

Coloring in a Series of Three Hundred and Fifty Consecutive Patients, All Diseases

Male, 149		Female, 201	
Light	59	Light	60
Dark	90	Dark	141

Psychologic reactions are altered. In their everyday life, in their social and in their sex life, psychologic reactions may be said to be abnormal or subnormal. In the more marked cases the girls are stolid, disinterested, unattracted and unattractive. These tonsil thyroid patients are hypothyroid unless the gland undergoes further change and hyperthyroidism develops, in which case there is a more or less altered symptomatology or the opposite picture of the one described.

When middle life comes, a larger than normal proportion of these young women have not married. The married ones may be barren or their marriage is comparatively fruitless.

Table 1 indicates the number that remained single and how many did not have children. The average number of children was 1.3 per family, which is considerably below normal.

After middle life these women have a hectic menopause, with all that this implies. Superimposed on menopausal disturbance there is climacteric hypertension in its purest form. After the menopause, depending on the presence or absence of complications, and depending on organ inferiority, which in turn is predetermined by inherited qualities, hypertension continues until decompensation occurs. In the absence of strain and fatigue, the health and disease of these women runs a more favorable course. In the presence of strain and organic disease, decompensation is precipitated and death follows. Thus, from beginning to end, we find ourselves dealing with individuals who seem to be dominated by definite hereditary traits and constitutional disturbances.

TABLE 3.—*Nutritional State*

In a Series of Ninety-Five Cases of Hypertension

Males, 28		Females, 67	
Overnourished	22	Overnourished	59
Undernourished	6	Undernourished	3
Normal	0	Normal	5

In Three Hundred and Fifty Consecutive Patients—All Diseases

Males, 149		Females, 201	
Overnourished	51	Overnourished	72
Undernourished	76	Undernourished	109
Normal	22	Normal	20

IN THE MALE

During childhood and up to adolescence, the early history of these individuals as already stated is the same in the two sexes. Following puberty in the female, the tonsil thyroid syndrome is seen. In the male from adolescence to middle life, the clinical picture of neurocirculatory asthenia, or effort syndrome, is found.

A study of the preceding infectious diseases in hypertension patients reveals that an exceptionally large number had had typhoid and diphtheria, which I believe to be responsible for systemic injury. The thyroid gland is known to be involved during typhoid. Diphtheria is a well known cardiovascular poison. Many years ago, Thayer[5] called attention to the fact that typhoid is a precursor of arterial hypertension. It may also be, as Draper[6] suggests, that certain types of individuals are particularly prone to certain infections.

The patient with neurocirculatory asthemia is not of the athletic type. He may be slender or may tend to obesity. The muscular system and other supportive skeletal tissues are not well developed.

The physiologic panel offers evidence of serious disturbance. For a time these patients were looked on as having hyperthyroid conditions. Many of them present a symptomatology highly suggestive of hyperthyroidism. Some of these have increased basal metabolism which can hardly be distinguished from true hyperthyroidism. Neuromuscular control in these patients is very poor. This is seen in the exercise test

1. Barach, J. H.: Tonsil Thyroid Syndrome in the Female, New York M. J. **114:** 648 (Dec. 7) 1921.
2. Else, J. E.: Regeneration of Thyroid Gland, J. A. M. A. **89:** 2158 (Dec. 24) 1927.
3. Sloan, H. G., in discussion on Else (footnote 2).
4. Cole, W. H., and Womack, N. A.: Thyroid Gland in Infection, **90:** 1274 (April 21) 1928.
5. Thayer, W. S.: South. M. J. **10:** 367 (May) 1917.
6. Draper, G.: Human Constitution, Philadelphia, 1924.

of the cardiovascular examination. Patients with neurocirculatory asthenia are without force, direction or grace when in action, which in part accounts for their innate dislike and incapacity for physical exertion.

The whole train of cardiovascular manifestations stamps these patients as being subnormal in this respect. Fatigue, exhaustion, precordial distress, tachycardia, arrhythmia, dizziness, headache, sweating, cyanosis of the extremities and vascillating blood pressure, all indicate inefficiency of the circulatory apparatus.

After middle life is passed, the characteristic symptoms of neurocirculatory asthenia are seldom seen. What has happened to this "disease state" and where are its symptoms? The neurocirculatory asthenia is not cured. As I view them, the circulatory symptom complex is only hidden for the time being. In the first half of life, temporary arterial hypertension is frequently noted. With the advance of years, hypertension recurs more frequently, and in later life it becomes permanently established. I [7] called attention to this sequence of events in 1922. Dr. Leonard Murray [8] of Toronto, at the meeting of the section on Practice of Medicine last year, commented on the results of his observations that patients diagnosed during the war as having neurocirculatory asthenia, have since that time shown a steady rise in blood pressure.

Early in life in these persons, a certain instability, restlessness, a lack of confidence and shirking of responsibility are found. During middle life, which is the healthiest period in their lives, they frequently get by without special manifestations, although they frequently are restless or ineffectual, or they may be abnormally active and intensive in their special field of endeavor. The psychologic life of the hypertensive type of patient has been variously discussed. His attitude toward life and his habits have been blamed for the development of hypertension. My own view at the present time is the very opposite of that. Observations and experience with these patients lead me to believe that their reaction to life is purely the result of certain hereditary and constitutional qualities and that neither the strenuous life nor the sedentary life is the cause of their hypertension. I believe that the behavior and the habits of these persons are the result and not the cause of their disease, and that the individual's reaction to the environment is determined by what seems best for him as an individual, and therefore is largely protective.

I am satisfied that the reaction to life of the patient with hypertension, his desires and his ambitions, his work and his play are primarily somatic and not psychic. I believe that such a man's behavior depends more on the stuff of which he is made than on any hygienic philosophy that he may have adopted out of life's experience. Before the age of 70 is reached the majority of these patients have run their course. Organ inferiority will have manifested itself by that time and the fatal accident has happened.

CONSTITUTIONAL TRAITS COMMON TO THE TWO SEXES

Other constitutional traits are obviously present in these patients. In a group of 157 cases the hypersthenic type predominated. Light hair, light skin and blue iris were dominant, as indicated in table 2.

Seven-eighths of these patients were overweight, as indicated in table 3.

7. Barach, J. H.: Essential Vascular Hypertension, J. A. M. A. **79**: 2140-2143 (Dec. 23) 1922.
8. Murray, Leonard, in discussion on Heart Disease, J. A. M. A. **89**: 1478 (Oct. 29) 1927.

SUMMARY AND CONCLUSION

Whether the life history of these persons is read forward, from the juvenile to the senile periods, or whether their life history is read backward, from old age to early childhood, a train of events which seems to determine their whole lives in a constant and almost predestined manner is followed. The frequent infections of early childhood are, as I see them, determined by their lack of immunity rather than by accidental exposure to infection. In the type of individual which concerns us here, these infections continue unabated up to the time of puberty, regardless of hygienic surroundings. With pubescence a differentiation occurs, and the symptom complex that follows is determined by sex. The female manifests the tonsil thyroid syndrome, and subsequent anatomic, physiologic, immunologic and psychologic changes, which modify her

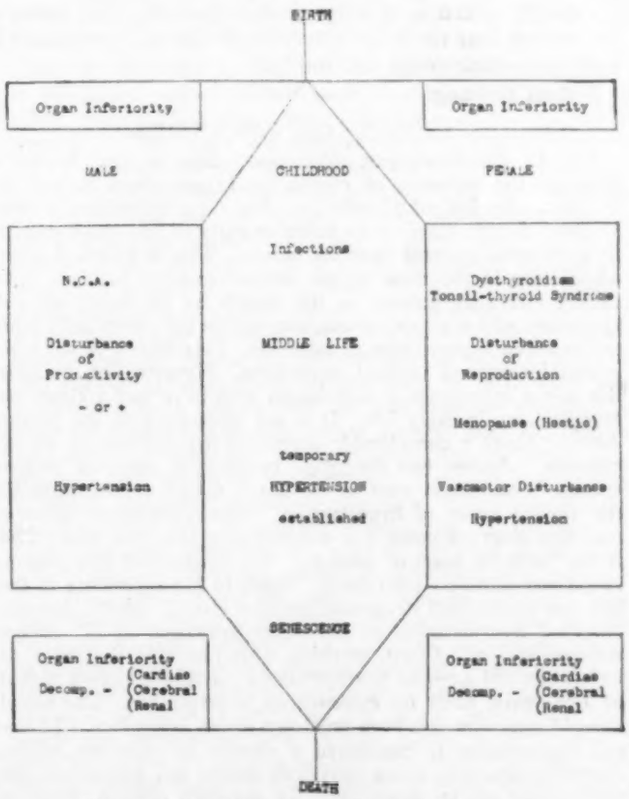

Chart 2.—Life history in cases of arterial hypertension.

state of health and her productivity as a woman. When involution begins, her menopausal manifestations are exaggerated and about that time hypertension is established. From then on hypertension continues to the time of decompensation. The manner and the time of her decompensation are determined by organ inferiority. In some patients this organ inferiority is the result of previous disease, but in many this organ inferiority is an inherited characteristic. In some families it causes cardiac failure, in others cerebral hemorrhage, and in still others renal failure.

The male at the time of pubescence does not develop the tonsil thyroid syndrome. That is why goiter is so much less frequently recognized in the male than in the female. The male develops neurocirculatory asthenia or effort syndrome. To what extent the thyroid gland is involved in the male, at the present time, no one can affirm or deny. The inferior circulatory apparatus of these patients, the intermittent hypertension of early

life and the permanent hypertension of later life, all manifest themselves in turn. Thus we see that the so-called essential hypertension which is supposedly of unknown origin is in fact the sequel of a train of events covering the whole life of the individual. For this the name sequelar or constitutional hypertension would be more suitable. Those who are familiar with the neurocirculatory asthenia type will realize in what manner his productivity is disturbed and altered. The productive life of the male as seen in the neurocirculatory asthenic patient is altered, just as the reproductive life in the female is altered. When senescence begins, the temporary hypertension of middle life becomes permanently established. From then onward the course of events depends on organ inferiority and environmental factors; sooner or later decompensation follows.

This is what I have seen in patients whose disease state is frequently designated as essential hypertension. In reality there is a very definite sequence of events indicating that their hypertension is the end-product of a definite pathologic continuity.

Jenkins Building.

ABSTRACT OF DISCUSSION

Dr. L. G. Rowntree, Rochester, Minn.: Dr. Barach's ideas of the sequence of events, as I understand it, are as follows: An individual with hereditary predisposition toward vascular disease develops an infection early in life which results in widespread general vascular injury. This is followed after adolescence in the male by the neurocirculatory asthenia syndrome, and after puberty in the female by the tonsil thyroid syndrome, which persist throughout middle life; eventually both terminate in hypertension in later life. This theory is not supported by general medical experience. Hypertension in later life is not infrequnet in individuals who have had a clean cut tonsillectomy in early life. It is not uncommon in the young. Alvarez found a considerable degree of hypertension in school children. Amber has described twenty-five cases of hypertension in childhood seen at the Mayo Clinic, representing all the various types of hypertension. Neurocirculatory asthenia was first observed under war conditions by DaCosta, who called it the "irritable heart of soldiers." He emphasized two factors, strain and infection (diarrhea). Lewis in his experience in the late war emphasized strain and infection (trench fever). Lincoln observed five instances of the effort syndrome in 325 school children studied. Grant, working with Lewis in the study of more than 600 cases of neurocirculatory asthenia, over a period of five years, finds no evidence of hypertension. The tonsil thyroid syndrome has been unknown to me heretofore. Essential hypertension is considered a disease of unknown origin. Heredity, infection, strain (physical, mental and emotional) and toxins may all be concerned. In my own opinion, there is another factor still unidentified. Hypertension is rarely controlled by tonsillectomy. Ruthless removal of tonsils is not justifiable and, in my opinion, should be undertaken only when local evidence of disease of the tonsils exists or there is some other indication than mere hypertension. In connection with the pathogenesis of hypertension it seems to me that the sympathetic and vasomotor system should not be overlooked. The manifestations of hypertension in the early stages are more functional in nature and in the late stages are more organic in nature. I am hopeful that an approach to the treatment of hypertension may still be found in the field of the sympathetic system. Dr. Barach's paper is worthy of our careful consideration because it represents ideas developed as the result of twenty years' observation of patients in his own practice.

Dr. Joseph H. Barach, Pittsburgh: As Dr. Rowntree has said, a renewed interest and a revaluation of values in regard to certain phases of this topic have been long overdue. A careful scrutiny of the life history of these patients reveals many interesting facts. Most striking of all is the definite sequence of events. If the ideas presented here do not at first sight seem to apply to one's experience, one need only study the events in the life of a group of these patients as outlined and what I have said will clarify itself before many patients are studied.

IDENTITY OF THE URINARY PROTEINS OF NEPHRITIS*

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EDMUND ANDREWS, M.D.
AND
WILLIAM THOMAS, M.D.
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By means of the precipitin reaction, urinary proteins in nephritis have been studied and found to consist of the following blood proteins: albumin, pseudoglobulin and euglobulin. These proteins vary in their quantitative relationship in different individuals. When the method of globular crystallization with subsequent dialysis of the solution of the crystals was applied to the urinary proteins and the precipitin reaction applied to the successive fractions, the latter ones gave less response to the serum of definite titer than a blood albumin solution of the same percentage content. In one case a fraction of this character was obtained that showed a precipitin reaction only in high concentration with a powerful antialbumin serum. The same protein, however, when injected, produced an antialbumin serum.

In the search for nonblood proteins characteristic of a definite condition, it was found that in experimental uremia produced by hypertonic sodium chloride and in both canine and human ether nephritides, liver proteins free from blood proteins are eliminated in the urine. However, the blood protein soon begins to appear and rapidly increases in amount. This seems to be the usual occurrence when foreign protein gets into the blood stream. Organ protein must necessarily be regarded as a foreign protein.

In crystallizing the proteins from a patient with nephritis it was observed that the mother liquor, which was saturated with ammonium sulphate, apparently contained protein material. This material must be of small molecular size as far as proteins are concerned, otherwise the ammonium sulphate would have precipitated it. In order to subject this material to as little change as possible, the ammonium sulphate was removed by means of barium carbonate at body temperature in vacuum. From 5 gallons of urine by this method we obtained 4.5 Gm. of protein which in its general behavior falls into the class of peptones. It is not coagulable; it is not precipitable by alkaloidal reagents with the exception of the tannic reaction. It passes through collodion membranes and is not appreciably precipitable by aluminum hydroxide cream. The protein from which the peptone was obtained was precipitated between the limits of 25 to 100 per cent saturation with ammonium sulphate, and therefore it is necessary to assume that it was either adsorbed by the blood protein or was in definite combination with it, and that during the process of crystallization by the action of the low hydrogen ion concentration of the ammonium sulphate, due to its hydrolytic dissociation, some of the peptone was split from its association with the blood protein.

When the urinary proteins of nephritis are precipitated between from 25 to 100 per cent saturation with ammonium sulphate and then dissolved in water and dialyzed in collodion bags against distilled water, some

* Read before the Section on Pathology and Physiology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

* From the Laboratory of Physiological Chemistry, Department of Surgery, of the University of Illinois College of Medicine, and the John McCormick Institute for Infectious Diseases.

of this adsorption, or chemical compound of the albumin with the peptone, is broken up and a small quantity of peptone dialyses through the collodion.

There appear in the dialysate also appreciable amounts of coagulable protein. These are identified by the precipitin tests as blood serum albumin and pseudoglobulin. The amount of the highly dispersed blood protein is limited and as the dialysis is continued finally, more protein does not pass through the membrane in spite of the fact that large quantities remain inside the bag.

The proteins that pass through the collodion membrane are toxic, producing coma and death in dogs on intravenous injection in small doses.

The change in the dispersion of this blood protein and its toxicity offer room for interesting speculation. Is the toxicity due to the increased dispersion of the protein as the nondialyzable blood protein is not particularly toxic or is the increased dispersion due to a chemical combination of the protein with a toxic substance of small molecular size?

When normal human blood serum is dialyzed against distilled water an appreciable amount of protein does not pass through the membrane. When blood serum from patients with severe nephritis is dialyzed against distilled water, indications of protein in the dialysates are always obtained. In animals in which uremia has been produced experimentally, the same result is obtained with the serum.

COMMENT

It would appear from these experiments that in nephritis the blood proteins in the urine either have adsorbed, or hold in definite chemical combination, some lower protein cleavage products. The idea is suggested that possibly the elimination of blood proteins can be explained on the basis that the body uses this means for detoxifying the split protein products and then the kidney removes them from the blood because they now resemble in part foreign proteins.

CONCLUSIONS

1. Blood serum proteins, albumin, pseudoglobulin and euglobulin constitute an important part of the urinary proteins in nephritis.

2. Peptones are eliminated either in chemical combination or adsorbed by these blood proteins.

3. Some blood protein, the dispersion of which has been increased, is eliminated and this protein is toxic.

4. It is suggested that possibly the blood protein serves as a detoxifying agent.

ABSTRACT OF DISCUSSION

DR. LEONARD G. ROWNTREE, Rochester, Minn.: My interest in this remarkable piece of work arose from a visit to Dr. Welker's laboratory two or three years ago. I was so favorably impressed with the work at that time that I offered the services of the medical side of the Mayo Clinic in the collection of material for the furthering of the study. We are greatly indebted to Dr. Welker and to Dr. Hektoen for the remarkable methods of identifying certain proteins. As I understand this work, the theory which Dr. Welker has advanced is about as follows: In nephritis there is destruction of proteins with the development of split products which are toxic. The albumin of the plasma thereupon constitutes itself into a cart, loads up with these split products and takes them to the kidney, where they are discharged in the urine. Dr. Welker by his manipulation chemically breaks up the combination with the albumin and recognizes the individual components. The only questions that I can raise concerning possible sources of error, I have taken up already with Dr. Welker: Is the urine, with which he works in the laboratory, the same urine that was excreted by the kidney? Is it changed in any way prior to the manipulation to which he subjects it? Has he excluded all extraneous sources for the proteins he finds in the peptone? Is it possible that certain processes which go on in the urine, such as putrefaction or the presence of casts or of red blood or white blood cells, are responsible for these observations? I believe that these questions will have to be answered before we can accept his ideas as to what is occurring in nephritis. It seems to me that the work is tremendously important in another way because it opens up an approach to the production of experimental nephritis and uremia, which is something that has long been needed in the field of medicine. It is my opinion, based on an intensive interest in this study, that, provided Dr. Welker can substantiate what he has already done and can exclude sources for the changes that he has described other than those which he has already considered, his work constitutes one of the greatest contributions to our knowledge of the kidney and to our knowledge of nephritis since the time of Bright.

DR. W. H. WELKER, Chicago: So far as proteolytic action is concerned, either by the possible presence of trypsin or other enzymes that may have their origin in the body or in bacteria, I feel quite comfortable in the fact that protein split products derived by such action are excluded by the very nature of the methods that have been used for their isolation. If the peptone had its origin through proteolytic activity which had gone on after the urine had been excreted in the bladder and subsequently, then we should expect to find this protein uncombined. In digestion we do not find peptone combining with the more complex protein molecules. The peptone in digestion mixtures is not precipitated by ammonium sulphate. When we add peptone to protein solutions and attempt to combine the peptone, even by raising the body mixture to body temperature, we find that the combination does not take place readily. I am satisfied that this suggestion does not alter our point of view. On the other point that has been raised by Dr. Rowntree, I am not in a position to speak positively at the present time. It is possible that these proteins may have their source; that is, the peptones may have their source in the cellular material of the urine. These elements, however, could not possibly be the source of the blood albumin and the blood pseudoglobulin, the dispersion of which has been increased. From the number of cases we have studied, I should say that I do not believe that it is possible that all of the peptones we have obtained in all of these cases could possibly have come from the breakdown of the cellular material, but I am not sure. Considerably more work will have to be done on that phase before I want to say the final word on that subject. Dr. Rowntree has raised an interesting point. I am grateful to him for making the suggestion. We will try to investigate his question more fully.

Increase in Abortions.—The problem of abortion has become world wide. A steady increase in its frequency has been noticed in all countries for the past thirty years or more, but in the last decade this increase has been positively appalling. In 1890 there was in Germany one abortion to every ten births; in 1911 the proportion had dropped to 1:5. In 1919, in Hamburg, to quote but one example, one abortion occurred for every two births; and in 1926 there were in the same city two abortions for every three births. The actual number of abortions each year in Germany is somewhere between 500,000 and 875,750. Conditions in this country are probably not quite so bad, though for lack of any statistics we may not be too sure about it. This enormous increase is brought about almost altogether by criminal interruption of pregnancy, whether carried out by shady physicians or midwives, by persons without any sort of previous training or by the patients themselves. . . . Ninety per cent or more of all abortions are criminal abortions.—Gellhorn, George: Treatment of Septic Abortion, *Am. J. Obst. & Gynec.*, October, 1928.

A PLAN OF MEDICAL SERVICE FOR THE INDUSTRIAL WORKER AND HIS FAMILY*

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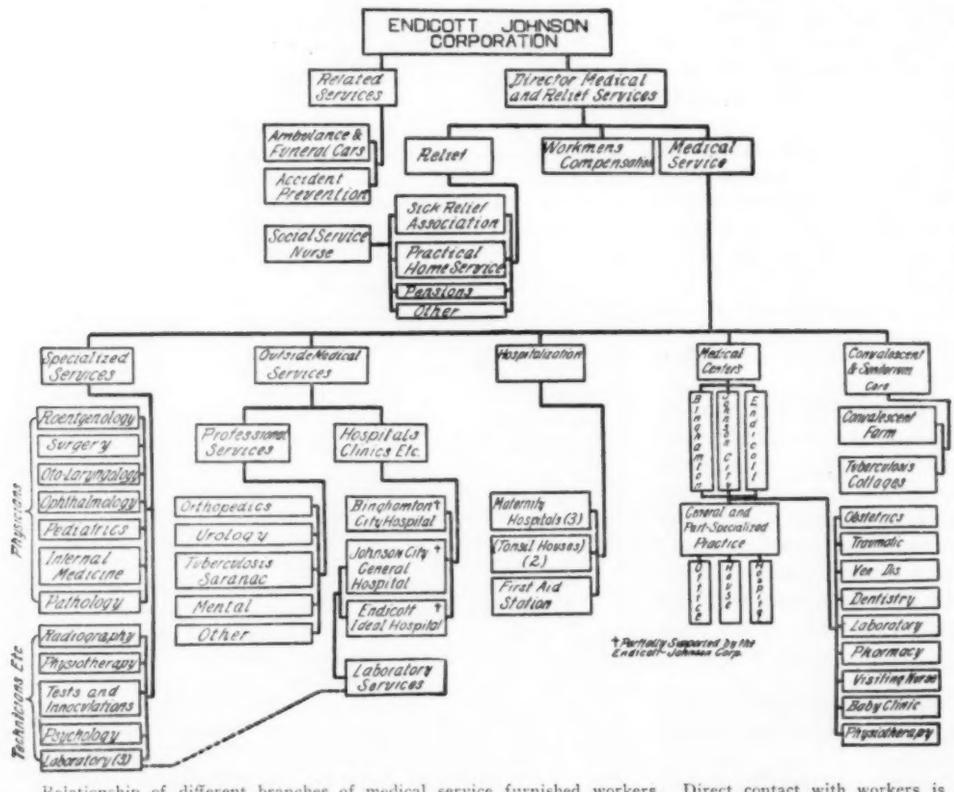
Many plans have been proposed to lessen the disproportion that exists between wages and the cost of medical care. As society is now organized, it is difficult to change the income of any industrial group. Adequate medical care requires the combined services of physician, surgeon, specialist, laboratory, nurse and hospital. The only practical economic method of furnishing medical care is organized medical service.



Relationship of different branches of medical service furnished workers. Direct contact with workers is made through medical centers in the branches named on dependent panels. All other service obtained by staff reference from medical centers. Specialized services shown are furnished by staff physicians. Those labeled "outside medical services" are obtained by reference to physicians or hospitals outside the company staff and paid on a fee basis (see item 3, table 2). Laboratory service in two of the three community hospitals shown is supplied by the company staff, as indicated by broken line.

The average annual wage of 30,000,000 industrial workers in the United States in 1925 was $1,250.[1] Only 1.5 per cent of all incomes in the United States exceed $5,000.[2] This leaves a great body of wage earners who can live in comfort, provided no unusual demand is made on their incomes, but whose family budget is dislocated or destroyed by a prolonged illness.

When sickness comes to a wage earner's family, he must burden himself with a serious debt or he must default in the payment of his medical bills. He must accept medical charity or he must do without medical service.

Some European states have established voluntary health insurance paying cash benefits. Others have established compulsory health insurance paying cash benefits and providing medical care. These plans have met with disfavor in this country.

Group medicine, particularly in diagnosis, has been offered at cost to those able to pay a moderate charge. It does not solve the problem of immediate continuous medical care required by the family.

An ideal plan of medical service must conform to certain essential requirements. It must provide medical care for the worker and his dependent family because the family is a biologic and economic unit depending for support on the wage of the individual and profoundly influencing his earning power.

The ideal plan must provide competent physicians to supervise the health of the worker when he is well and to care for him when he is sick.

The ideal plan should provide laboratories, technical examinations, hospital care, nursing service, drugs and supplies. It should endeavor to restore functions lost through illness or injury. It should have auxiliary aid, such as sick relief insurance against loss of wage, and financial assistance, to prevent disintegration of the home.

Such a plan must not be arbitrary or compulsory in its methods. By the character of service, it must command and retain the confidence of the worker. It must not be limited by red tape or regulations. It must be flexible. It must not be a tax burden on the community but a legitimate charge on the group that is benefited.

The plan I offer for consideration has been in operation for twelve years and has proved practical. It is an active working plan developed by the Endicott-Johnson Corporation, which employs 15,000 workers in shoe factories and tanneries, located at Endicott, Johnson City and Binghamton, N. Y. The average annual wage of these workers is $1,441. The definite relationship between health and efficiency was early recognized by the management. In 1916, one full-time physician was employed. Today there are twenty-eight full-time physicians, three full-time dentists, one half-time dentist, five dental hygienists, sixty-seven full-time trained nurses, four pharmacists, two bacteriologists, two laboratory technicians, two physical therapeutists, one roentgenologist, six motor ambulances, sixteen clerks and twenty other helpers, as cooks, maids and janitors.

In addition to these, when occasion requires, the services of other physicians, specialists, nurses and hospitals are procured.

Medical care is offered to all the workers and their dependents. Estimating that each worker has three dependents, the potential number included in this plan

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. United States Bureau of Labor Statistics: Bull. no. 457, Govt. Printing Office, May, 1926, pp. 428,429.

2. Leven, Maurice: Income in the Various States, Its Sources and Distribution, National Bureau of Economic Research, Inc., 1925, p. 290.

is 60,000. No direct charge is made for the service and there is no wage deduction. The entire expense is borne by the company. Increased individual production, and profits as the result of this plan, cover the cost.

In each of these three communities previously mentioned, there is a medical center furnishing twenty-four hour service, including all drugs and supplies. Care of the teeth is provided by three dental offices. Each center operates a maternity hospital. Prenatal care is offered, and more than 1,000 women are delivered each year. The mothers remain in the hospital about two weeks and return at frequent intervals with their babies to a well baby clinic. Preventive medicine is offered in correct feeding, formation of health habits and the use of preventive vaccines and serums.

The company maintains a rest home in the country for debilitated girls and women, and a sanatorium at Saranac Lake, N. Y., for the treatment of tuberculosis.

TABLE 1.—*Medical Work Accomplished in 1927*

Hospital days	80,403
Births	1,063
Office calls	116,622
House calls	83,581
Dental visits	21,388
Dental extractions	15,219
Refractions	1,730
Nursing visits at home	11,703
Ambulance calls	13,301

Every worker seeking employment receives a complete physical examination. If no serious defects are found, he is given six months' trial at suitable work. He is then reexamined and, if satisfactory, is permitted to join a sick relief association which entitles him to a weekly benefit of $10.50. Membership is not compulsory but about 12,000 workers are members. Last

TABLE 2.—*Cost of Operating Plan, 1927*

1. Salaries		
Physicians	$150,000.00	
Nurses	110,550.00	
Clerks and other help	40,451.00	
		$ 301,001.00
2. Medical bills		
Hospital expense, laboratories, drugs, sun dries, etc.		193,480.00
3. Outside service		
Physicians	$ 34,263.00	
Nurses	40,580.00	
Hospital bills	176,412.00	
Sanatoriums	25,674.00	
Rest farm	17,657.00	
		$ 294,586.00
Total medical cost		$ 789,067.00
4. Relief		
Food, fuel, rent, clothes, etc.	$183,346.00	
Retirement pensions	36,971.00	
Widows' pensions	67,425.00	
Total relief		287,742.00
Total		$1,076,809.00

year they received $132,000, of which they paid $118,000 in premiums of 20 cents a week. This is the only insurance feature of the plan.

Industrial accidents are cared for by staff physicians, as the company is self-insured under the law of the state of New York. One hundred thousand dollars is on deposit with the state to guarantee payment of accident claims.

Injuries are kept at a minimum by practical instructions in regard to industrial hazards and by careful supervision of machinery, plants and working conditions. There are no characteristic industrial hazards in this industry.

Other activities associated with this plan are retirement pension, widow's pension, and the furnishing of food, fuel, rent, clothing, domestic help and funeral expenses when required.

A partial list of the medical work accomplished under this plan in 1927 is given in table 1.

The cost of operating this plan, exclusive of interest and depreciation, is given in table 2.

The cost of medical service for these 15,000 workers was $789,000 or $52.60 per capita. At the rate of 2.5 cents for each of the 32,000,000 pairs of shoes manufactured by these workers, the cost of their medical service can be covered.

305 Clinton Street.

ABSTRACT OF DISCUSSION

DR. T. R. CROWDER, Chicago: No one could fail to be interested in hearing about this extensive plan of socialized medical service in the plants of a large industry. The plan evidently works and has received the enthusiastic support of its supporters. It differs from other plans, chiefly in the extent to which medical service is carried. There are very few industries that take over the full medical care of even their employees, and fewer yet which take in the families, unless it be on some sort of an insurance basis where the workers themselves furnish the financial support for it. Dr. O'Neil has given us a clear description of his plan, and I think we can comprehend very well its favorable side, at least. But he has said nothing about the difficulties that may arise. It appears to me that those might be considerable and would be well worth discussing, particularly for the benefit of those of us who are in industrial medical work and may want to expand our service. It would be very interesting to know what obstructions are encountered when one includes the whole medical care of the individual worker and of his family as well. Even when only the employee himself is included, I know they may arise; with the family included they must be greater. The community, including particularly the local physician, might start some trouble, which might make it difficult to carry out such a plan. But more important is the economic principle involved in this sort of a plan. It has always seemed to me that it is not desirable for an industry to take over the medical care of employees' families. I would go even further and say that, so far as my opinion has yet been formulated, it is not desirable even to take over the full medical care of the employee himself, except on some basis whereby the employee pays at least a part of the cost. What we need in industrial medicine, more than we need provision for curative care, is a study of the causes and sources of illnesses that arise out of the industry itself, and, after that, the working out of remedies by which these can be prevented. I fancy that is the thing to which Dr. Harris particularly referred in his condemnation of present industrial medical practice; namely, that we do not go far enough in our investigations to learn what we need to do to prevent the workers in an industry from developing bad health.

DR. V. S. CHENEY, Chicago: Dr. Crowder thoroughly expressed my views. We are trying to do too much in industrial work. There is only one place where this form of industrial practice is justified and that is in an isolated mining camp or an isolated lumber camp where it is impossible to get any other medical care, but in a city where there are other physicians, we have to consider them. Where did the $789,000 go? Certainly not to the local physician. We must consider the local physician always. I used to think that this plan of Dr. O'Neil's was the only ideal plan, but I am getting away from that idea. We have to make the employee look after himself. We have to force him to do it. That is the only way of maintaining his health. We may have have to say, "If you don't do it, you are going to lose your job," because that is what he is selling to the industry. I like to do things for people. No one likes it better, but maybe we are pauperizing them. We are giving them too much charity. It is another form of volsteadism, in just a little different guise.

DR. S. W. WELCH, Montgomery, Ala.: I want to emphasize what Dr. Crowder and Dr. Cheney have just said. We can

go too far in public health work and in industrial medicine. The medical profession is trained to take care of the sick. It is the duty of public health authorities to prevent sickness among the group and, when it occurs, to refer the individual to the medical profession. It is not any part of public health activities to treat the sick. The whole object is to prevent illness and to control the spread of disease among the group. That should be an axiom and it should not be violated by public health authorities. Pauperizing of whole communities of American citizens is bad. Every man ought to be stimulated to take care of himself. He ought to be stimulated to choose his own physician as far as it is possible. There comes a time when industry must take care of its labor, and the medical profession ought to help as far as it is possible to do so, but it must be understood always that it is not the plan of public health authorities to come in between the right of the individual to choose his family physician and the right of the physician to treat the diseases of human beings. The main thing we want to bring before the public is that public health administration is a medical specialty and that the public health authorities are absolutely dependent on the medical profession for the highest good that can come to the work. I am very much in favor of industrial hygiene and commend every industry in its laudable enterprise to raise the level of efficiency of its employees, but it ought to be warned to put on the brakes in time to prevent a catastrophe.

DR. E. F. CODY, New Bedford, Mass.: I want to say in connection with this matter of the Endicott-Johnson Company, which was a Massachusetts shoe company, that it is my impression that the company was driven out of Massachusetts by labor troubles. The Massachusetts shoe industry has been through a great deal of internal dissension, so much so that the industry is waning very rapidly. The Endicott-Johnson Company, since its troubles began a number of years ago, has erected a very large plant in St. Louis, the hide center of the country. Massachusetts has been a heavy shoe producing state in the past, and now this industry is seeking a new and remote center. It must offer certain advantages to skilled labor, and there is skilled labor in shoemaking. There are a good many hands and processes involved in producing a good pair of shoes. The Endicott-Johnson Company, and very properly, is offering these special advantages to skilled workmen to come to a part of the country where they will be free from the extremely annoying and embarrassing labor difficulties through which, most unfortunately, Massachusetts is passing. The condition that obtains in one part of the country may be most necessary for the vitality of an industry, whereas quite different conditions may prevail in another part of the country.

DR. GEORGE H. BIGELOW, Boston: As I see it, the Endicott-Johnson industry is very much pushed by doing away with waste, and the industry that cannot do away with waste cannot exist, and the industry that can, will. Some time ago I spent a day at the Endicott-Johnson plant. It is not interested in the philosophy of public health, or in the philosophy of the medical profession or of any other group, but in reducing waste from disease. As long as the company is continuing this expenditure of more than $1,000,000, it apparently has found it more profitable to organize its efforts to do away with waste due to sickness than to have it disorganized. Whether or not it is wise is a matter for the executives to decide. They may be half-baked sentimentalists. The applicability of their method to other industries is a question. I imagine that Dr. Crowder with the Pullman Company, if he were to have the care of the families of all Pullman porters, would have enough to drive even Dr. Crowder mad. It seems to me that whether or not this system recognizes adequately the dignified position of the health officer or the dignified position of the medical practitioner is not a problem that is disturbing the directors of the Endicott-Johnson Company; they are interested in whether or not it is the most economical method of perpetuating their industry by doing away with waste.

DR. W. C. WOODWARD, Chicago: An intelligent consideration of the scheme described by Dr. O'Neil is impossible without a knowledge of the terms on which the medical and nursing staffs are employed, the wages paid, the duration of employment, and retirement privileges. It requires, too, a knowledge of the wages paid to the working persons in the establishment as compared with the wages paid in similar establishments similarly situated in the same community at the same time. It will contribute toward a clearer understanding if we know whether food, fuel and clothing have been bought in bulk by the employer and issued to the employees without cost in order to conserve their health and to enable them to live more happily and do more efficient work; and if not, then why such necessaries of life are withheld while medical service is furnished. A situation such as that described by Dr. O'Neil must be viewed as a practical social problem. It is not enough to tell us what the employer-corporation is doing and to state in general terms that the course it has adopted has proved profitable to the company; we should be told whether what is being done is profitable to the employees and profitable to the community now, and whether it will continue to be profitable in the future.

DR. LOUIS I. HARRIS, New York: I feel myself under peculiar restraint, realizing for the first time that the dignity of being chairman is a sort of muzzling affair, but with your consent, I should like to interpose one or two comments on this subject which is one that is so tremendously big that it touches the whole subject of medicine, the adequacy of medical service rendered throughout the country, the ability of workers to provide themselves out of their wages with care, self-selected, and the question of pauperization. It is a question whether the worker is getting all the wages that he is entitled to under a system of medical care such as Dr. O'Neil has outlined. This is not bolshevism. I assure you that I am neither pink nor red, but his plan raises the question whether part of the wage is not being taken out in the form of medical service. I do not think that there is the slighest danger of pauperization through Dr. O'Neil's services when the average wage is only a little more than $1,400 among 15,000 employees. The question is, Are they getting an adequate wage? Are they not paying too much for medical service, or are they getting a higher grade of medical service that supplements their wages considerably? There are a host of questions which are raised by this discussion which jibe with the considerations that are now engrossing the attention of the committee that is studying the cost and adequacy of medical service in the United States. Dr. O'Neil's medical service is one of the varied experimental efforts to compensate for the lack of an adequate system of general medical service, because there has not been thus far a statesmanlike coming to grips with the question of providing medical service for family and community units. The questions raised here today are of tremendous importance. I doubt whether Dr. O'Neil can possibly answer them in the course of a short period. They are questions that are far more fundamental, and they would very well engage the attention of an entire meeting of this section. The answers should not be left to those who are not affiliated with the American Medical Association and who do not represent the organized medical profession. The questions should be dealt with in a socially minded way, so as not to pauperize but to give preventive and therapeutic medical service to those who are otherwise prematurely thrown on the industrial scrap heap by virtue, as Dr. Crowder intimated, of the lack of study of the things in industry that might have prevented disease, and by virtue of a lack of medical organization that is adequate. France has recently taken a great forward step, challenging once again those who are opposed to the philosophy or idea of social medicine. Is this the answer?

DR. DANIEL C. O'NEIL, Binghamton, N. Y.: When I brought this plan here I thought that it would start something and it has. I regret that some have failed to grasp the purpose and function of the plan. Our company has never conducted a manufacturing business in Massachusetts and has never had a factory in St. Louis. The physician from Massachusetts who said that labor troubles drove our company from his state has been misinformed. Dr. Harris very capably relieved me of the privilege of speaking about pauperization. In the minds of some persons, pauperization applies only to the poor. The worker whose average wage is only $1,200 cannot maintain a family and obtain adequate medical service, except by going into debt or accepting medical charity. There are a limited number of our workers who believe they can obtain more satisfactory medical service outside. There is no obligation on any worker to accept company medical service. His relations are just as

cordial and his standing with the company is as good if he obtains his medical service elsewhere and pays for it. Last year the average wage for all workers below the rank of superintendent and foreman was $1,441. According to the United States Labor Department, the average wage paid to workers employed in the shoe industry in 1925 was $950. Do we furnish food, fuel, rent and clothing to our workers in a wholesale manner? Of course not. We furnish them only to the workers who suffer misfortune and who need assistance. We give medical service only to the workers who need it, and who ask for it. I am sorry that the vital statistics of our communities are not at hand. Dr. Nichols' office in the New York State Department of Health sent them to me about two weeks ago. I hesitate to quote from memory, except to say that our birth rate is more than double the rate for upstate New York. The relationship of our service to the other physicians in these communities and to the communities as a whole is satisfactory and mutually helpful. Private practitioners know that a burden of medical charity is lifted from them; that they are able to do better work, and that their patrons expect more adequate medical service because of the activities of our service. In addition to the salaries paid our staff, all professional expenses, including telephone charges, books and automobile upkeep, is covered, and opportunity to receive postgraduate instruction is provided.

PHYSIOLOGIC CHANGES IN POSTURE DURING THE FIRST SIX YEARS OF LIFE*

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The health of the growing individual is determined by (1) heredity, (2) nutrition, (3) infection and (4) posture.

Heredity influences all other factors and must be accepted as the basis on which all environmental forces act. By inheritance the child is tall or short; has a well or ill shaped chest; broad, well occluding or narrow, ill fitting dental arches; strong, flexible or weak, inelastic feet, and strong, well balanced or weak overlong muscles. Separation of the rectus muscles with accompanying lordosis is as marked a familial characteristic as facial contour.

The tall, slender, long muscled, loose-jointed individual slumps readily into the posture of least resistance—forward thrust head, stooping shoulders, swayed back, tilted pelvis, knock knee and pronated feet. In this posture full inflation of the chest is impossible, the intercostal angle remains narrow and ptosis of the abdominal contents is inevitable.

The shorter, better muscled person is less apt to develop along faulty lines. The very vigor of his skeletal muscles tends to prevent slumping. An overstretched muscle in a normal state of health is stimulated to contract sufficiently to restore normal distance between origin and insertion. Native physical vigor as well as skill in manual feats lend zest to activity, and good muscle tone keeps pace with development.

In all human affairs a medium zone seems to be the place of greatest happiness. Certain persons are hampered by too powerful muscle groups and too short tendons. The powerful psoas tilts the pelvis, the calf group everts and pronates the foot when the heel is not elevated; the plantar fascia and intrinsic muscles of the foot make for "pes cavus" of slight or greater degree.

Nutrition has an important bearing on all developmental processes. Only with good and constant nutrition can the upward reaches of hereditary possibilities be reached. During periods of malnutrition, postural faults develop or an unfortunate tendency is increased. The bony changes and muscle weakness due to rachitis are purposely omitted from this discussion.

Acute infection with its attendant muscle weakness may mark the beginning of posture changes of serious and lasting moment. During convalescence, care must be exercised lest stronger muscle groups gain advantage over weaker, producing deformity which becomes permanent or which can be corrected only by long and difficult reeducation.

Chronic infection usually accompanied by a poor state of nutrition likewise allows opposing muscle groups to lose their physiologic balance.

Postural development is also evidently influenced by shoes, clothing and bed, and by habits of standing, walking and sitting.

Shoes or socks that are too short force the feet into eversion and pronation in order to relieve pressure on the toes during weight bearing. Rigid soles, especially in the very young child, prevent development of the intrinsic foot muscles and, by forcing the foot to take off from the inner border instead of normally over the toes, contribute to the same deformities. Elevation of the inner border of the heels offsets at least in part the resistance offered by the rigid sole.

A bed that sags in the central portion emphasizes the forward droop of the shoulder girdle, especially if a pillow is used, and in susceptible persons who sleep on one side may well be a factor in postural scoliosis. A bed made firm and flat by boards between the springs and mattress is desirable.

Standing and walking with the feet parallel, gripping the ground, the pelvis rotated anteriorly, the chest elevated, the head held erect by the posterior cervical muscles, is the ideal to be aimed at, in contrast to the everted and pronated feet, posteriorly rotated pelvis with its accompanying lordosis, caved in chest and forward thrust head, all too commonly seen.

Sitting posture concerns mainly the shoulder girdle and head position. In this, the habit to be taught is head erect and chest so elevated that free expansion is possible.

Apart from these internal and external forces, each child passes through a definite and predicated racial biologic postural development.

Every normal infant is bow-legged, and the legs straighten with walking. This may seem unworthy of mention. However, it is so frequently a matter of concern to mothers that sound teaching of this truth is evidently not as universal as it should be. The fear of bow legs causes many an infant much unhappiness because of unnecessary restraint when he should be free to develop naturally. Worse still, very frequently manual force is regularly applied to straighten the legs, thereby contributing to the straight legs and flat feet of adult life.

The infant when he first assumes the upright posture, unsupported, has but one object to attain: stability. Stability depends on a wide base and the lowest possible center of gravity. Therefore, he stands with the feet well separated, everted and pronated, the knees locked, and the upper portion of the trunk and the head thrust forward to maintain his balance. The everted and

* Read before the Section on Diseases of Children at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

pronated feet prevent falling laterally or forward, while the trunk, being forward of the center of gravity, prevents falling backward. Any one who observes the great proportion of backward falls which the toddler has cannot doubt the accuracy of this observation. When walking is begun, this posture of stability is maintained. The feet are moved forward in succession to a new base and the body is moved forward *en masse* by means of a side to side turning movement. Only with improving coordination does walking become of the adult type, with the foot acting as a fulcrum. Since normal function rather than mere stability is the desirable development, a flexible soled, well fitting shoe is of the greatest importance at this age. As in all developmental processes, the infantile state should not be prolonged. Development is the fruit of function. A daily period barefooted is very valuable. Even if the child has a degree of pronation which is being corrected with modified shoes, this daily period of complete freedom gains more in development than it loses in return toward deformity.

Every child becomes progressively knock kneed, the condition reaching its height at 3 years and receding very rapidly in the normal child during the following year or two. Formerly we were much concerned by this apparently progressive deformity, but now our only concern is to determine as accurately as possible, first, that knock knee is not a prominent inherited family characteristic; secondly, that short or too rigid shoes are not prolonging the condition, and, lastly, that nutrition is such that bone and muscle weakness do not likewise prevent normal growth progression.

At the age of 3, two other changes in body mechanics should be well under way. The abdominal muscles should be so well developed that the prominent abdomen of infancy is much reduced, and the intrascapular group should be so developed that the shoulder girdle is rotated posteriorly and the head held more erect. Whether this has happened or not, two simple exercises should be carried out regularly: for the abdominal group, straight leg raising while lying supine with the legs widely separated, and for the intrascapular group, backward lifting of the head and thoracic spine while lying prone with the hands over the sacrum and the scapulae pulled firmly toward the midline.

CONCLUSIONS

1. Postural tendencies are an hereditary characteristic.
2. Postural development during growth is influenced by nutrition, infection (acute or chronic), shoes, clothing, bed, habits of walking, standing and sitting, and muscle training.
3. Certain described postural changes are incident to the age of the individual and tend to return to a more desirable state if development is not interfered with.

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ABSTRACT OF DISCUSSION

DR. E. T. EVANS, Minneapolis: It gives me considerable satisfaction to hear a paper stressing the importance of the recognition of postural difficulties of the early types. It is also good to hear that function without disability is considered as the criterion of the normal, and that esthetic defects do not classify these as pathologic cases but as cases for improvement. Witness, for example, the treatment of flat feet from the standpoint of the orthopedist by means of active muscle training alone, these cases being considered as largely of congenital type. In the preschool age, judgment must enter into the diagnosis because the functional diagnosis must be objective. Subjective symptoms are not present unless the child is old enough, but we can aid the good postural development of the child along the lines that the authors have indicated. Shoes, clothes and so forth are recognized factors. I should like to say in regard to muscle training that the cooperation of the child should be obtained without nagging. I think that very often we try to teach these children exercises to be carried out day in and day out. They will not always assist. Cooperation of the mother of the child is a great factor. For instance, the child should be taught to pick up everything he drops. That is good training for the erector spinae group. If the child does not drop things, the mother should drop things and have the child pick them up. The child should assist in household dusting, trying to reach the ceiling, and so forth. That also trains the abdominal group of muscles.

DR. CHARLES GILMORE KERLEY, New York: From many years' observation in children of all types, I find that posture plays a vastly greater part than is generally appreciated. It is perfectly astonishing how malnutrition, underweight, anemias and poor appetite are caused by grave postural defects. In my office work, every child who can stand is first examined in the erect position, and that gives one a better idea as to future possibilities for development. Many of my cases are of the gastro-intestinal type, with constipation, loss of appetite, and other conditions affecting the gastro-intestinal tract. In all these cases I make a careful gastro-intestinal examination. It is surprising how often ptosis, gastroptosis and other pathologic intestinal conditions fit right into the picture of the protruding abdomen, the hollow back and the tipped pelvis. I have seen dozens and dozens of such cases. If posture is going to have such a pronounced effect on the development of the child, then we ought to know and appreciate its significance. The fact is that human beings have not been long enough in the erect position to have their gastro-intestinal apparatus adjusted to their requirements.

DR. T. C. MCCLEAVE, Berkeley, Calif.: I want to emphasize the influence of fatigue and faulty rest conditions in these children. It has been said that we spend all of our lives in our shoes and in our beds. As the authors have pointed out, these two things are very important in determining our later correct posture and our correct development and nutrition. Every patient should be examined carefully in the upright position to determine the various factors that have been brought out in regard to posture and the condition of the feet and legs, and when there is any suspicion of incorrect conditions in respect to these points, one should visit the home and find out just what the conditions of the rest periods of the child are. When one considers that an infant spends most of its time lying in bed, and that older children should spend about half their time in bed, it can be realized how important it is that the bed should be adjusted correctly to their needs. It is surprising how much neglected this very important feature of a child's environment is. Often a child is occupying the crib previously occupied by his predecessors, and it has become worn out and utterly unsuited as a resting place for a baby. The mattress is soft and sagging, so that his body is distorted. It is extremely important that the physician who undertakes to study a child and guide his developmental progress should know not only the position presented by that child as he appears at the office, but also that he has proper rest periods on proper apparatus for rest in his home.

DR. CLIFFORD D. SWEET, Oakland, Calif.: I am happy to say that I find among the orthopedists an almost universally accepted idea; namely, that exercise and development are better measures for correcting deformities in young children than are the older, more severe measures. I agree with Dr. Kerley. There can be no question that the upright posture is the product of evolution. The child, to a certain extent at least, recapitulates in his growth the history of the race. The decision we must make is when and how much we should help the individual child in his natural course of development. If malnutrition or infection is prolonged, or if his normal development is interfered with by some of the handicaps of civilization for a prolonged period, permanent harm will result. Dr. McCleave has touched on a very important subject. As we go into homes and put our fists into the middle of the baby's bed, we find that it often lacks the support that it should have.

MYOCARDIAL DISEASE AND ITS GASTRIC MASQUERADES*

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One of my earliest recollections in the practice of medicine is as follows:

A medical friend of mine on withdrawing from practice to enter laboratory work asked me to look after his family, including an elderly gentleman, his grandfather. The latter was a retired builder who appeared to be in good health except for one complaint: on carrying home the market basket, a daily custom, he would experience a sense of oppression in the lower sternal region and in the epigastrium. He would rest for a moment to bring up a little gas and then, completely relieved, would walk home the remainder of the way in comfort. He had no pain, no feeling of anxiety, only, as he expressed it, "indigestion and gas."

I was just out of the hospital and had the vast experience of three months' medical training to my credit. On examining the old gentleman I found beaded radial arteries and prescribed glyceryl trinitrate on general principles. As the patient did not improve, I took him to a noted consultant, who diagnosed the case as one of indigestion and ordered phenyl salicylate and sodium phosphate. A few weeks later, when apparently convalescing from a mild attack of grip, the patient suddenly died in bed.

It was, I think, my first death in private practice. Neither I nor any one in the family had been prepared for it. The shock was great and the lesson for me lasting.

Since that memorable day, I have seen a goodly number of cases in which symptoms of indigestion masked organic heart disease and have observed with interest how many prominent persons die, according to the newspapers, of acute indigestion.

The gastro-intestinal tract is so intimately connected with the heart through the vagus nerve that reciprocal disturbances are not surprising. It is perhaps easy to understand why gaseous distention of the stomach should cause palpitation and precordial distress. Conversely, the heart may produce symptoms in the region of the stomach or the upper part of the abdomen. Of these symptoms, those resulting from passive congestion of the stomach in states of decompensation are comparatively easy of explanation. Others are very obscure. I shall illustrate some of these more obscure types which are clinically important in proportion to their obscurity.

CASE 1.—Dr. C. began to have epigastric fulness and pressure, with loss of appetite and great fatigability. He lost flesh, looked bad, was despondent, and believed himself the victim of malignant disease. An x-ray examination seemed to bear out the suspicion of a cancer of the stomach. When I inspected the roentgenograms I was unable to agree with that opinion. Examination of the patient showed slight enlargement of the heart with feeble flapping sounds, low blood pressure, and absence of any mass in the abdomen. On further questioning he stated that he was a little short of breath on exertion and that he did not have any vomiting or pain.

Weighing the facts carefully, pro and con, I came to the conclusion that his symptoms were due to myocardial weakness. I advised rest, digitalis, and a reasonable diet. For some time after leaving the patient I was uneasy, thinking that perhaps after all he might have malignant disease. But when he came to see me a few months later he was practically a well man. In this patient the myocardial weakness expressed itself under the guise of loss of appetite, gaseous distention and pressure, marked fatigability, and shortness of breath which was not at first mentioned.

CASE 2.—Dr. P. complained of fulness and oppression after meals and of a sense of weight in the upper part of the abdomen. On close questioning he admitted that he had some shortness of breath, but he laid emphasis only on the indigestion. A gastro-enterologist had been consulted and, taking the patient's view, had instituted lavage and dietetic and other treatment directed to the stomach. When I saw the patient I was struck by his evident debility and by his sallow color and was not surprised to find the signs of myocardial disease, marked cardiac enlargement and a gallop rhythm; there was no murmur. The liver was distinctly enlarged. The diagnosis of myocardial disease with passive congestion of the liver was confirmed by the subsequent course. It is interesting that the patient, a very capable internist, and the gastro-enterologic specialist were both entirely misled by the prominence of the digestive symptoms. I think that if there had been a murmur present the true diagnosis would have been reached much earlier.

If angina pectoris and coronary obstruction are included under the general head of myocardial disease, the number of cases of a gastro-intestinal or abdominal type is greatly increased. Such inclusion is entirely proper, for it is clinically often impossible to separate chronic myocardial disease from disease of the blood vessels of the heart; in fact, many cases of the former are directly traceable to blood starvation, the result of sclerosis of the coronary arteries.

Coronary disease may cause gastric symptoms of a pronounced character, the most extreme mimicry being produced by acute coronary obstruction. This may simulate perforation of a peptic ulcer, biliary colic, acute pancreatitis, or intestinal obstruction.

The following case is illustrative in this connection:

CASE 3.—M. A., a man, aged 44, Russian, married, a manufacturer, for several years had had a good deal of pain in the epigastrium for which he had consulted a number of physicians, receiving various diagnoses, such as duodenal ulcer and gallstones. One day I was asked to see him. I found him in an attack characterized by excruciating pain in the epigastrium and profound shock ending in eventual unconsciousness. The symptoms and physical signs were those of coronary occlusion. The patient died during the attack. On going over my records I found that the man had come to me on one occasion several years before complaining of sciatica. On examination I found the dorsalis pedis pulse absent and after close study was able to make a diagnosis of intermittent claudication. We may justly assume that the intermittent attacks of abdominal pain which had led to a diagnosis of gallstones or ulcer had been due to a temporary or permanent occlusion of small branches of the coronary artery; the possibility of a true abdominal angina, an intermittent claudication of branches of the celiac axis, has also to be kept in mind.

Complete occlusion of the coronary arteries may produce gastric or other abdominal symptoms but a non-obliterative endarteritis is also capable of producing these symptoms. In this type of case the outstanding features are fatigability on slight exertion, some shortness of breath, and a sense of oppression in the precordial area or in the epigastrium and frequently distention with gas. It is the last that often dominates the picture and gives the impression of a primary gastric disease.

CASE 4.—P. B., a man, aged 59, married, complains of spells of indigestion during which he fills up with gas and has pain in the epigastrium and right hypochondrium. At first sight the symptoms suggest some gastric or gallbladder disease, but there are two additional facts of importance which modify

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

that diagnosis. First, the spells of gaseous distention are accompanied by an extreme apprehension, a profound fear of death, and, secondly, the patient has had typical attacks of angina pectoris with retrosternal pain radiating into the left arm. The fear of death is not nearly as marked in the anginal attacks as in those of so-called indigestion.

The patient is heavy set, markedly prostrated, with low blood pressure, muffled heart sounds and a slightly enlarged, somewhat tender liver.

There is every reason for thinking that the patient is suffering from coronary disease and that the "indigestion" is symptomatic of that condition. I do not believe that he has gallbladder trouble.

Case 5.—Mrs. P. F., aged 65, complains of indigestion, fulness after eating, gaseous distention, and midthoracic pain which she attributes to the gas, although it often assumes an anginal character. She has dieted for a number of years and takes yeast, soda mint and compound spirit of ether to bring up the gas. What are the facts? Her blood pressure varies from 180 to 220 systolic; the arteries are definitely sclerotic. She has little endurance and is easily exhausted by trivial efforts. Lately, a systolic murmur has appeared over the body of the enlarged heart. Undoubtedly, the real lesion is a myocardial, probably coronary, disease, but for the patient the true nature is masked by the bloating and the consequent eructation.

Case 6.—M. J. K., a widower, aged 64, complains of indigestion and gas, which is most distressing when the stomach is empty but is relieved by taking food. The systolic blood pressure is 200 and the heart is enlarged to the left. An electrocardiographic tracing shows evidence of defective muscular contractility. The diagnosis is myocardial degeneration with gastric symptoms.

Case 7.—Mrs. G., aged 61, lost a son in the war, and began to have nervous dyspepsia with suggestion of mild gallbladder disease. Examination showed marked enlargement of the heart, extrasystolic arrhythmia, systolic blood pressure 212, and diastolic blood pressure 110.

In both the foregoing cases the outstanding symptoms of the hypertensive myocardial disease were in so large a measure digestive that the serious underlying condition had been pushed into the background.

Case 8.—Dr. K., aged 59, had had attacks of indigestion and pain in the gallbladder region. Recently, he had an operation for the removal of the gallbladder, which contained twelve stones. Improvement was temporary. There was gradual onset of cardiac decompensation, which is now quite marked.

In this case, I believe the myocardial disease, perhaps attributable to focal infection arising in the gallbladder, had existed for a long time but had been overshadowed by the abdominal disease. Had it been recognized and its true relation fully understood, operation might have been done earlier and the final breakup postponed.

Persistent vomiting may be the chief symptom of cardiac decompensation and may readily be interpreted as due to primary gastric disease. I have seen it lead to a diagnosis of cancer of the stomach. In several instances I was able to trace the vomiting to digitalis that had been given either on general principles or because the cardiac disease had been diagnosed. However, when the vomiting began and proved resistant, the diagnosis had been changed to that of disease of the stomach. One patient was actually being prepared for operation for supposed gastric carcinoma when examination revealed mitral stenosis with decompensation affecting especially the left lobe of the liver.

I might add that pericarditis in some instances causes reference of pain to the epigastrium and to the right upper quadrant. Sometimes the pericarditis is part of a coronary occlusion syndrome and the abdominal signs are due to the underlying thrombosis rather than to the pericarditis; but a rheumatic pericarditis without coronary involvement may act in the same manner.

I could cite many more illustrative cases, but those I have given are probably sufficient to sustain my thesis that disease of the heart may appear in the guise of a gastric or other abdominal disturbance and that the disguise may be so complete that the real disease behind the mask is not suspected.

Of course, it is always possible that the two diseases may coexist.

And now a few words about the methods of avoiding diagnostic errors, which in the nature of things might prove very serious:

1. One should take nothing for granted, neither the patient's opinion nor the diagnosis of previous physicians no matter how eminent.

2. One should make, as naturally follows from the preceding caution, a thorough objective examination.

3. In that examination one should make use of the somewhat neglected methods of inspection, palpation and percussion, in order to determine the position of the apex beat and the shape and size of the heart.

4. The electrocardiograph is useful, but it takes second place when compared with the universally applicable methods of physical diagnosis. The same thing applies to the x-ray.

5. I have not spoken of auscultation because it is the one method of physical diagnosis that even the most enthusiastic laboratory trained clinician respects. But it must be remembered that serious myocardial as well as coronary disease may exist in hearts that on auscultation do not reveal a murmur or even any arrhythmia.

With respect to the diagnosis of coronary disease simulating a disturbance of the upper part of the abdomen, I shall refrain from going into details. Suffice it to say that the essential thing is to bear in mind the mimicry to which I have referred and to examine the heart and to search the history for attacks of angina or of mild spells of thoracic oppression. A pericarditic patch helps the diagnosis greatly; fever and leukocytosis are likewise of help and also, as already mentioned, absence of the dorsalis pedis pulse, since that at times offers collateral evidence of arterial disease.

I would once more emphasize the importance of bearing in mind that apparent disease in the upper abdomen may in reality have its seat or origin in the heart.

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ABSTRACT OF DISCUSSION

Dr. Edward L. Tuohy, Duluth, Minn.: It may be of interest to call attention to the method whereby I have come to have a clearer understanding of the problems Dr. Riesman has presented. At St. Mary's Hospital we have a postmortem percentage of from 60 to 70 monthly. The postmortem revelations concerning coronary sufficiency and myocardial capacity have fastened themselves so indelibly on all our staff members that the surgeons are leaning somewhat backward in estimating acute upper abdominal conditions. It appears sometimes that they might be just a little overzealous regarding cardiac conditions, and a little loath to accept the fact that conditions such as cholecystitis or cholelithiasis, for example, may overlap with coronary disease and angina pectoris. The hidden presence of aortic or coronary disease lurks as a menace in many individuals. We must often surmise this menace more from collateral and associated evidence than from direct and immediate symptomatology. We have noted carefully from 70 to 80 per cent of primary hypertension cases which terminate by the route of myocardial failure. How may we clinically secure

hints or leads as to this large group of people who, without having angina pectoris, still have failing hearts due primarily to hyperpiesis and secondarily to deficient coronary circulation, and likely to give the symptomatology discussed by Dr. Riesman today? Studies of the size of the heart, and carefully made roentgen-ray silhouettes, with a ruling out of the other usual sources of cardiac hypertrophy, yield a more accurate basis for a prognosis than is commonly appreciated. We must recall that the blood pressure frequently drops—even the diastolic—when myocardial exhaustion develops. Our postmortem observations have further helped us to differentiate quite consistently between the clinical picture of ordinary angina and of coronary occlusion, despite the fact that in both the commonest pathologic lesions found concern the left coronary, and in occlusion the fatal "one centimeter" of its descending branch. In contrast, substernal oppression, digestive disturbances and nocturnal dyspnea may well portend deficient cardiac circulation in the zone supplied by the right coronary. Not many women have angina pectoris; a great many are hypertensive and obese; not a few die of heart failure, albeit less dramatically than the usual "aortic death."

DR. E. T. F. RICHARDS, St. Paul: I particularly wish to emphasize the importance of coronary thrombosis in this connection. Coronary thrombosis is a surprisingly common occurrence. In the last fifteen years its incidence has risen annually, probably because of its more accurate recognition. Its occurrence in the man over 40 is equal in importance to that of pneumonia at this age period. The clinical syndrome of coronary thrombosis is not appreciated or kept in mind enough. For example, in a man, aged 50, seen recently because of very severe pain in the epigastrium with a leukocytosis of 20,000, it was extremely difficult to convince the attending physician that the cause lay above the diaphragm. Fortunately, in the course of an hour or two the appearance of a pericardial friction rub saved the patient from an unnecessary laparotomy. The pain in coronary thrombosis may be referred entirely to the epigastrium; the patient may refer it vaguely to the lower sternum or the upper part of the abdomen. As a rule, it is placed higher up, but when in the lower sternal or epigastric area, difficulty in diagnosis might be great, so that gallstone colic and pancreatitis have both to be considered in a case of coronary thrombosis; or, vice versa, an acute upper abdominal disease must be considered when the heart is involved. As we get counts of 18,000 and 20,000 leukocytes in these cases with fever and pain referred to a rather vague area (the lower sternum and epigastrium) it is perhaps not surprising that unnecessary laparotomies are carried out. The presence of a pericardial friction is a great aid, but it is an evanescent sign and is frequently absent. It may come and go, or it may not appear at all, or it may appear very late. Shock in coronary occlusion is a striking manifestation as shown by the grayish pallor, the sweat and the fall in blood pressure, and it is out of proportion to the results we get on auscultation of the heart. The heart early in coronary occlusion may not be disturbed in its rhythm or rate. Within a few hours, however, the rate rises and arrhythmias with murmurs appear. The electrocardiogram is of great value when we get the typical flattening or inversion of the T wave. However, this may occur too late to be of value in the immediate diagnosis.

DR. DAVID RIESMAN, Philadelphia: I am glad that the speakers have emphasized the importance of coronary occlusion as a disease to be taken into account in acute conditions characterized by gastric or epigastric symptoms. However, I do not want it to be forgotten that other forms of heart disease, ordinary myocardial disease without coronary occlusion, may produce gastric symptoms. The milder types of dilatation or enlargement of the heart in which there is no sudden shock, only the constant complaint of indigestion and gas, are very important and are illustrated by some of the cases I have cited. I agree with both speakers that one must bear in mind acute coronary occlusion whenever a man over 40 is suddenly seized with epigastric pain and severe shock. I would also lay stress on one other point; namely, that the man has been an excessive smoker. In my experience, coronary occlusion (I hate to say this in the presence of some of my friends here) is much more common in persons who smoke to excess than in those who do not.

ACUTE INTESTINAL OBSTRUCTION

THE CORRELATION OF RECENT EXPERIMENTAL STUDIES AND CLINICAL APPLICATIONS *

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As many studies on the same subject are progressing simultaneously under variable conditions and from various angles of attack, there not infrequently appear many articles with apparently divergent views. It is also frequently observed that the rather guarded conclusions of the investigator which have been drawn from his specific studies are either quite loosely or broadly interpreted to be very general in their applications. For these reasons the status of intestinal obstruction, especially from the standpoint of the lethal agents, appears confusing. In spite of this disparity of opinions, which are, however, more apparent than real, this subject has gradually evolved from one that started at the postmortem table. Though still to be greatly feared, it is not without a reasonable hope of being classed as a surgically curable disease by prompt intervention. For many years, especially from an investigative standpoint, this condition has been treated as if from its name the obstruction of the continuity of the intestine was the all important factor. In spite of this, many of the experiments reported have the lumen of the intestine reestablished without due stress on this important omission. Many complicated procedures have also been used which makes interpretation more difficult. On the other hand, the clinician often uses the term obstruction in too general a way without due regard for the underlying pathologic condition that the occlusion has induced.

Experience teaches, however, that the symptomatology and the rapidity of the course of the disease at times are entirely out of proportion to what one should expect from a simple mechanical occlusion of the bowel. At the operating or postmortem table this fact is verified by finding not only an obstruction of the intestine but also a segment of gangrenous or partly devitalized intestine. If the lumen of the bowel alone is obstructed, we should expect to find at first only those symptoms and effects which are directly referable to the physiologic changes present. The variable degrees of severity are dependent on the level of the lesion and the treatment the patient receives.

The individual with a simple obstruction has intermittent colicky pain increased by oral administration, vomiting and a tender tympanitic abdomen without great rigidity. There is often visible peristalsis. The temperature, pulse and respiration are not greatly altered. The blood pressure is normal.

If, however, in addition to a simple constriction or band, one has the occlusion of a definite strip of the intestine, as in volvulus or strangulated hernia, there is an obstruction to the continuity of the bowel plus segmental involvement and a derangement of its vascular tree. This means that, in addition to physiologic changes, there is manifested a critical morbid state from which we should expect to find more severe symptoms.

The individual suffering such a lesion has, including the foregoing symptoms, a more distended abdomen,

* Work done in the University of Oregon Medical School Department of Anatomy.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

often a mass, early symptoms of profound collapse, and often a superimposed intoxication.

DEFINITIONS

Clinically, there are then two fundamental classes of acute intestinal obstruction under which may be grouped all of the types of the classic lesions described. Stated briefly, these are (1) such cases as bands and adhesions which cause acute simple obstruction of the continuity of the gastro-intestinal tract without primary vascular derangement and (2) those, such as volvulus, incarcerated hernias and intussusception, in which there is a variable length of intestine obstructed as well as an interference of the vascular supply to it. This second group I have called acute intestinal strangulation.

There is still another group of rather important obstructions of the intestinal tract of interest to the surgeon which should be mentioned although they do not belong to the purely mechanical types defined. This group one might call physiologic obstruction. This type is usually seen following some extensive intestinal surgery or other surgical intervention on poor risks. In cases of this kind the obstruction is only potential and exists by virtue of atony of the bowel. This results in a loss of normal intestinal peristalsis, secretion and absorption. This condition is not severe enough to be regarded as paralytic ileus but may progress to it.

COMPLICATIONS AND SEQUELAE

The complications of acute simple obstruction and strangulation proceed in somewhat similar direction but vary enormously in degree, rapidity of development and severity. These facts are of paramount importance in regard to the final outcome.

In simple obstruction of some duration there may occur above the point of occlusion variable degrees of distention, ecchymosis and superficial ulceration, depending on the level of the lesion, and whether fluid, food or cathartics have been given by mouth. The most feared complication is perforation at the base of the occluding stricture with resulting peritonitis.

In acute strangulation there is rapid progression to gangrene and great distention of the segment. This is soon followed by an intraperitoneal transudation of toxic fluids and, finally, perforation. In the latter type, according to the extent of the lesion, death often occurs before rupture of the segment. The former condition, which at first is a comparatively benign lesion, may lead to one complicated by an abnormal mucosa and, eventually, perforation.

EXPERIMENTAL OBSTRUCTION

In this work, all the preparatory operations were done under general anesthesia. The acute experiments were carried out under local anesthesia. In a previous paper my former associate Dr. R. W. Hausler and I [1] presented facts to warrant the clinical classification of obstruction as outlined. We were able to produce experimentally in animals, under local anesthesia, syndromes which closely paralleled those seen in man. It was also pointed out that in uncomplicated cases, in both man and animals, the underlying morbid anatomy was quite dissimilar in these two classes and that the lethal agents were necessarily different. In succeeding articles,[2] facts were presented which brought us to the conclusion that death in simple obstruction of the bowel, uncomplicated by factors induced by experimental conditions leading to the sequelae mentioned, was due to inanition. This state is characterized by profound tissue loss, anhydremia and the resulting clinical changes in circulation. These patients showed a terminal elevation of carbon dioxide combining power of the blood and a moderate increase in nonprotein nitrogen, but these levels in themselves were insufficient to warrant serious individual consideration as lethal factors. The slight decrease in sodium chloride in two cases was not enough to classify the state as a hypochloremia, as the figures were within normal range.

The condensed protocols of three dogs with complete food and water withdrawal are presented in support of this contention:

Dog 4 (previously reported).—Obstruction of duodenum with inversion of ends. Killed twenty-one days after operation.

Day	Cl Expressed as NaCl Mg. per 100 Cc.	CO_2 Per Cent by Volume	Nonprotein Nitrogen, Mg. per 100 Cc.
Preoperative	494	43.2	23
Twenty-first postoperative	541	42.5	67

Dog 5 (previously reported).—Simple inversion obstruction, Dead twenty-eight days after operation.

Day	Cl Expressed as NaCl Mg. per 100 Cc.	CO_2 Per Cent by Volume	Nonprotein Nitrogen
Preoperative	519	45.2	23
Twenty-eighth postoperative	462	62.7	42

Dog 3.—Adult shepherd, weight 47 pounds (27 Kg.). Simple high jejunal obstruction. After loss of 43 per cent of weight (twenty-three days), continuity of bowel reestablished. Dextrose and saline postoperatively. Recovery complete.

Day	Cl Expressed as NaCl Mg. per 100 Cc.	Nonprotein Nitrogen
First preoperative	574	27.2
Second operation preoperative	513	40.1

These dogs and others in which chemical examination of the blood was not done as a routine, prove that after the reparative period is over and the bowel mucosa has returned to normal, obstruction of the lumen of the upper intestinal tract is compatible with life. The period of time through which this may extend falls well within that in which a normal unobstructed dog is able to withstand complete starvation. This duration of normal life, the absence of toxic symptoms and the comparatively normal chemistry of the blood reveal that obstruction in itself without complication does not induce a severe constitutional reaction with marked alteration of the blood constituents.

In our earlier work, rechecked by later experiments using simple ties to produce occlusion, we found that our animals were grouped into three classes, based on their eventual status. They are: 1. Those animals which were given or induced to take water freely by mouth or otherwise in considerable amounts. Such dogs died within a few days, showing a reduction in chlorides and an abnormal preoccluded segment. 2. A definite group with or without such treatment in which the tie cut through in from three to six days, reestablishing the lumen with complete recovery. 3. A large number of animals which succumbed to peritonitis resulting from perforation near the tie.

It was obvious that if one were to find the significance of uncomplicated obstruction, other methods must be used. The method adopted, which we have previously described in detail, was cutting and inversion of the

1. Hausler, R. W., and Foster, W. C.: Acute Intestinal Obstruction: I. The Different Types of Obstruction Produced Under Local Anesthesia, Arch. Int. Med. **34**: 97-107 (July) 1924.

2. Foster, W. C., and Hausler, R. W.: Acute Intestinal Obstruction: II. Acute Strangulation, Arch. Int. Med. **34**: 697-713 (Nov.) 1924; Acute Intestinal Obstruction: III. Simple Obstruction, ibid. **36**: 31-43 (July) 1925.

bowel at different levels. In addition, physiologic solution of sodium chloride was used for two or three days to combat the complications of surgery enumerated, which are greatly increased with an obstruction present. After the healing period, fluids were completely discontinued so that overactive peristalsis, antiperistalsis or massive contraction of the preoccluded intestine, as manifested by vomiting and altered secretion, would be minimized.

Under this regimen the rather startling results mentioned were obtained. The entire picture of these animals fits well that of starvation. Clinically, the appearance is equally significant. The relatively normal blood chlorides may be explained by the loss of fatty tissue, rich in chlorides, which must be transferred from it to the blood. White and Bridge [3] have shown recently that loss of tissue chloride parallels that of the blood quite closely, so that it is natural to assume that, as this fat is removed for heat and energy, the excess of chloride is transferred to the blood stream to make up any lost by excretion, especially when this is reduced to a minimum.

In order to justify still further the necessity of elimination of experimental complications in a study of the effects of simple obstruction, the following experiments were performed:

In a series of six normal dogs in which various anastomotic operations were performed, the blood chlorides were estimated just before operation and on the second and third days following. Special fluids were not given except liquids by mouth. The drop in blood chloride expressed as sodium chloride ranged from 11.2 to 19 per cent.

In a group of these animals with bowel section and anastomosis, blood chloride titrations by a slightly different technic in another laboratory revealed a loss ranging from 8 to 16.2 per cent.

In the first group as high as 40 per cent of the loss of chloride has been accounted for by quantitative analysis of intestinal washings. That excessive vomiting, altered secretion and absorption of the occluded intestine and excessive fluid intake were undesirable factors to be excluded was revealed to us in earlier experiments. Hartwell, Hoguet and Beekman [4] had previously shown that replenishment of the fluid loss by physiologic solution of sodium chloride subcutaneously increased the length of life of the obstructed animal. We were early able to confirm their work by more secure methods. The proper balance, however, is very hard to adjust and one may virtually water an animal to death. Hypochloremia and death has been induced by us in animals by excessive administration of fluids alone without obstruction. Gatch, Trusler and Ayers [5] have produced similar results by quite analogous experiments. They have also verified our results in relation to the more rapid death when water is given ad libitum and vomiting increased. They have checked the blood chlorides showing the parallelism between chloride excretion and hypochloremia. All of these factors, admittedly present during the first few days of the obstruction as ordinarily produced experimentally, are either complications induced in the production of the occlusion or are the result of faulty treatment and are not materially concerned with obstruction as seen after the first three or four days. That they are of extreme importance from a clinical standpoint will be dealt with under treatment.

The terminal nonprotein nitrogen in our series of three to four weeks' duration without treatment is about the same as in those cases reported of only a few days' duration. For this reason it is not of considerable consequence as a lethal factor as it is also in amount quite compatible with life over a long period. It can be increased in these animals by any factor, as vomiting, which induces greater tissue destruction and lessened excretion.

The cut and inversion method to produce simple obstruction has been used by most of the recent workers in this field. This is the most secure method but has the disadvantage of producing an abnormal mucosa at the start of the experiment. This point has been established by our preceding protocols.

Examination of the literature will reveal that the majority of the reports of death in dogs from simple occlusion show the average life to be from three to five days. The hypochloremia found can be largely accounted for by the loss induced by the altered function through excessive vomiting or abnormal secretion and absorption and an injured mucosa.

I have seen a case of simple obstruction in a human being in good condition after eight days of occlusion without treatment, who died later from a perforation. I do not believe that this is an exceptional case. As previously mentioned, I have observed many animals that have lived through a three to five day period in excellent shape and then later have succumbed to peritonitis through rupture.

To establish this point and to show that the method of induction of the closure has an important bearing on the final outcome of the experiment, the following method was employed: Simple obstruction was performed by buried ligature, thus reducing the trauma of the mucosa to a minimum and ensuring a lessened degree of rupture. Over 60 per cent of the animals thus treated lived through the three to six day period without complications, when the obstructing ligature usually cut through. In all of these cases the gastro-intestinal tract proximal to the segment was kept empty, except in a few animals observed under the fluoroscope to ascertain the completeness of the obstruction. Some decrease in blood chloride was shown, but the readings were consistently above the danger level of inducing any symptoms of tetany.

COMMENT

In the light of the preceding experiments, in which the life of an experimental animal may be maintained with complete occlusion of the intestinal tract for several weeks, it appears that one is warranted in concluding that uncomplicated, simple obstruction does not result in early death with intoxication and hypochloremia.

We have shown that chloride reduction in the blood stream may be produced by certain gastro-intestinal procedures because of the establishment of a high gradient of irritability inducing abnormal secretory activity and lowered absorption, especially in the upper intestine. If, in addition to the surgical trauma, an obstruction is also included, greater chloride loss should result. If the area is further traumatized by excessive peristalsis and vomiting through ingestion of fluids

3. White, J. C., and Bridge, E. M.: Loss of Chloride and Water from the Tissues and Blood in Acute High Intestinal Obstruction: Experimental Study on Dogs with Duodenal Obstruction, Boston M. & S. J. **196**: 893-897 (June 2) 1927.

4. Hartwell, J. A.; Hoguet, J. P., and Beekman, Fenwick: An Experimental Study of Intestinal Obstruction, Arch. Int. Med. **13**: 701-736 (May) 1914.

5. Gatch, W. D.; Trusler, H. M., and Ayers, K. D.: Blood Chloride in Acute Intestinal Obstruction: Mechanism and Significance of Hypochloremia and Other Blood Chemistry Changes, Am. J. M. Sc. **173**: 649-667 (May) 1927.

ad libitum, still greater losses should occur. A decidedly abnormal preoccluded segment will result, which distinctly reduces the picture from one of simple occlusion to one of partial strangulation. Death in such cases from hypochloremia and possible toxemia may then be true. Gatch, Trusler and Ayers [5] have recently pointed out the importance of vomiting on the reduction of chloride by inducing hypochloremia with death in four days, by ligation of the ureters. Gamble and McIver [6] and Hartman and Smythe [7] have had similar results by different procedures. Our experiments by still different methods are in accord with these observations.

In animals with gastric fistulas produced while other investigations were being pursued, it was noted that the dogs with large pouches became very poor and examination revealed a reduction of the blood chloride. Animals with externally drained segments, in preparation for sterile loops, were often found to be in the same condition. This was especially true if the segments were long and high jejunal or duodenal and if irrigated. Walters and his associates [8] have reported similar observations in duodenal fistulas. These facts are pertinent when one considers how easily chloride may be drained from the system and also reveals how easy it would be to assume that death from such procedures was due to an intoxication similar to that described under simple intestinal obstruction. These observations also bear an important relation to treatment, which will be dealt with later.

If one recognizes the different experimental conditions under which the recent investigations of simple bowel occlusion have been made and properly interprets the various observations, it will be found that most of the observations are in accord. These might be enumerated as follows: 1. Simple uncomplicated occlusion of the intestine lumen is compatible with life over a time comparable with that of a normal animal with complete food and water abstinence. 2. The induction of experimental obstruction with an abnormal mucosa and the allowance of unlimited fluid by mouth produce excessive fluid and chloride loss with the production of a hypochloremic state and complicating alkalosis. 3. If, in addition to the latter state there is an alteration in the mucosa with distention and ecchymosis, there is a superimposed moderate intoxication.

ACUTE STRANGULATION

The group of acute strangulation comprises, in addition to actual strangulation experiments, all of the reports on loop obstruction. It also includes those of simple obstruction complicated by an abnormal preocclusion segment. In many instances it will be found that the continuity of the bowel has been reestablished in a large number of these reports and that actual obstruction does not exist. Although such procedures are necessary and helpful in a proper analysis of the factors leading to death, essential features are removed from the complex. Although these in themselves may or may not produce a fatal outcome, they are of considerable import, as has been seen from the previous experiments.

This class, as the name implies, infers that there is an alteration in the vascular bed of the occluded segment of intestine ranging from extreme congestion to extensive gangrene. One of the greatest difficulties in the proper estimation of the importance of any one factor in the production of the syndromes associated with this group of cases is the great variability of this state of vascular and tissue derangement, both in clinical and experimental cases. Inseparable from this degree of involvement, it would naturally be expected that the length of the involved segment would play an important rôle. The location of the lesion along the digestive tract is also of considerable import. There should be a great difference between an area mainly secretory and one largely absorptive. Their different functions and adaptability to distention are of equal consequence. This is particularly true of lesions of the small intestine, which cannot readily stand distention without injury, as compared with the large bowel, which has little difficulty in accommodating itself to great degrees of distention. The dissimilar bacterial flora from both a qualitative and a quantitative point of view should influence considerable variation in the acuity or progress of the disease.

In a previous communication these conditions were thoroughly investigated and the following facts elicited: 1. Death is more rapid with the increasing length of the involved segment. 2. Symptoms of collapse occur in direct proportion to the length and extent of distention of the injured segment. 3. High strangulation is more rapid in onset and destruction than low. 4. In these cases, when the length of life is seldom over forty-eight hours, fatal hypochloremia, alkalosis or dehydration are not found. 5. A moderate increase of the nitrogenous elements of the blood is always present. 6. A variable degree of intoxication and shock are seen, the former predominating in short segments, the latter with long strips.

In this work, observed clinically, there were three outstanding conditions which become the focus of our attention because of their apparent relation to treatment and diagnosis.

The first of these features is that in long segment strangulation, 18 inches and upward, the predominating picture is one of profound shock. This is manifested by an early and drastic fall in blood pressure, extreme elevation of pulse and respiration and usually a subnormal temperature. Death, which is a matter of hours, is too sudden to warrant a consideration of toxemia in the ordinary sense or to cause a profound alteration of the chemical constituents of the blood. I have never seen a severe generalized peritonitis which was even comparable to this picture. It approaches the syndrome of traumatic shock, either experimental or clinical, more closely than anything else.

In order to eliminate the factor of bacterial toxemia in these cases, as previously reported, I enclosed a twenty-four inch segment of small intestine within a thin rubber sac and obstructed the mesenteric pedicle in such a manner that it would just occlude the venous return primarily, and then closed the abdomen. Death occurred in about nine hours with the same clinical complex as described.

In addition to this, I prepared two animals with long sterile segments after a modification of the washing and drainage method introduced by Dragstedt and his associates,[9] in their intestinal loop experiments. The

6. Gamble, J. L., and McIver, M. A.: Effects of Pyloric Obstruction in Rabbits, J. Clin. Investigation **100:** 531-545 (Aug.) 1925.

7. Hartman, A. F., and Smythe, F. S.: Chemical Changes in Body Occurring as a Result of Vomiting, Am. J. Dis. Child. **32:** 1-28 (July) 1926.

8. Walters, Waltman; Kilgore, A. M., and Bollman, J. L.: Changes in the Blood Resulting from Duodenal Fistula, J. A. M. A. **86:** 185-189 (Jan. 16) 1926.

9. Dragstedt, L. R.; Moorhead, J. J., and Burky, F. W.: Intestinal Obstruction: An Experimental Study of the Intoxication in Closed Intestinal Loops, J. Exper. Med. **25:** 421 (March) 1917. Dragstedt, L. R.; Dragstedt, C. A.; McClintock, J. T., and Chase, C. S.: Intestinal Obstruction: A Study of the Factors Involved in the Production and Absorption of Toxic Materials from the Intestine, J. Exper. Med. **30:** 109-121 (Aug.) 1919.

continuity of the intestine was reestablished and, after about a month, the sterile segment in one of these animals was strangulated in the manner described. A simple obstruction of the intestine was also induced at a jejunal level. The animal succumbed in eleven hours with the identical symptoms that were described concerning the preceding animals. The absence of a bacterial flora had little if any influence on the outcome of this long segment strangulation. The production of a gangrenous segment was induced in the second animal in the same manner. After seven hours the dog was killed, and the devitalized intestine was removed, ground and filtered. The aqueous filtrate was in turn injected intraperitoneally into a normal healthy animal. Death did not occur but the dog became depressed, vomited, and showed during the course of observation a 60 mm. fall in blood pressure. Histamine-like bodies have been found in like filtrates. It would appear from these experiments, even though a sterile necrotic segment of intestine is toxic when avenues for absorption are open, that death may be caused with both bacterial flora and devitalized intestinal tissue excluded.

We are all familiar with cases seen or reported and of experimental investigations on animals in which death resulted from trauma. The shock produced in these cases appears to be closely related to that produced by histamine-like bodies. There seems to be a definite similarity in long segment obstruction to both of these conditions, and the experiments described lend credence to this observation.

That the rôle of the nervous system might play some part in the production of long segment shock was considered in our earlier work. This was revealed clinically and seen experimentally by the sudden fall in blood pressure. It was thought that the vagus and other afferent nerves might exert a specific influence on the progressive course of the syndrome.

Spinal animals were tried but the condition of the animals and the extremely complicating factors present do not in my opinion warrant any definite conclusions, even though some of the animals appeared to be distinctly favored in the presence of this lesion.

In a series of six animals, double vagotomy was produced. In one of these the splanchnics also were severed. It was found after considerable experimentation that the vagi could be severed completely by intrathoracic intervention under positive pressure anesthesia. Autopsy revealed complete severance in all cases but one, as opposed to the very difficult and insecure outcome when undertaken by the abdominal route. One animal succumbed to an acute pulmonary infection.

After about four weeks these animals were subjected to long segment strangulation. Although not all of the avenues of vomiting reflexes and other afferent pathways were severed by this procedure, little or no emesis occurred in these animals, and they appeared to be more comfortable during the early part of the experiment. In three dogs, blood pressure was maintained at a better level than in those in which the vagi or splanchnics were not eliminated. The other readings were not satisfactory because of technical difficulties. Length of life was apparently increased by a few hours, but this factor may well be within experimental error or individual tolerance, and definite interpretation in that regard is not justifiable.

The difficulty in dealing with these cases from an experimental standpoint is that complications are so great that interpretation is not altogether reliable, even though given in good faith. In all long segment strangulation, when venous occlusion has been so performed that the intestine becomes enormously distended and gangrenous, autopsy often reveals the remainder of the intestine in a variety of abnormal states. This is due to the tremendous trauma set up by the lesion. We have also observed that the slow release of abnormal intra-abdominal pressure, in experiments other than occlusion, is accompanied by ample evidence of great relief. One must not overlook the considerable blood loss to the loop and peritoneal cavity as a definite complication in this group, especially in relation to fall in blood pressure.

The next important factor which vitally concerns the status of segmental lesions pertains to the type of vascular intervention to which the bowel is subjected. In a previous report, we presented a series of animals in which the arterial and venous supply to the area was severed quickly and so completely that a strip of occluded anemic intestine resulted. This condition does not ordinarily simulate any clinical entity but serves to illustrate the importance of the type and degree of involved blood supply on the production of symptoms and death. With the same length of bowel and absence of other interference these animals lived about three times as long and died of symptoms indicative of peritonitis. The autopsy observations corroborated this observation.

It was thought advisable to compare long sterile segments on which complete and instantaneous obliteration of both venous and arterial supply were effected with those in which primary venous occlusion had been made. Two animals previously prepared with sterile segments were treated in this manner without a coexisting simple obstruction. It will be seen that in these animals there could not be distention of the involved area, violent peristalsis, loss of blood or marked peritoneal irritation. One would predict that these dogs should survive, and such was the case. Both showed after several hours a slight elevation of temperature and pulse rate but no other untoward symptoms. It appears, then, from the two foregoing sets of experiments that enormous abdominal distention, blood loss and trauma, with the addition of an obstructed lumen, may cause death in the absence of bacteria and their toxins. Nor does a marked disturbance in the chemistry of the blood occur. It will also be noted that an anemic section of sterile intestine does not possess marked toxic properties.

The third observation of particular significance pertains to the short segment complex. This lesion is in a large measure comparable to rather long segments in clinical cases in which conditions are favorable to less severe vascular injury. In this group toxemia plays a more important rôle, as evidenced by the clinical picture. The factors mentioned in long segment obliteration are not present in sufficient degree to produce profound shock, and the animal lives long enough to become involved in a toxic state. Absorption takes place readily through the abnormal mucosa and peritoneum. Death is hastened by the usual perforation. We also have demonstrated, however, that as toxic as obstruction fluid may be, many dogs with normal gastrointestinal tracts are capable of withstanding the entire content when injected intraperitoneally. For this reason, I believe that the syndrome is a combination of toxemia and the other factors seen in long segment strangulation. If the animals live only from twenty-

four to thirty hours, chloride reduction is an insignificant factor. Should the vascular obstruction be less severe and life spared for some time, chloride deficiency may become an additional complicated state, particularly if liquids are constantly given by mouth.

In considering the phase of toxemia, one should not be led astray by injection experiments, however, especially if the liquids are introduced by the blood stream. Such a procedure is in no way compatible with this study. Intraperitoneal injection without the induction of an obstruction must also be judged only by its merit as a means of analysis of a particular phase of the study. We have observed that the injection of dextrose, physiologic solution of sodium chloride, water and other slightly irritating but nontoxic solutions will temporarily upset the electrolytic equilibrium of the blood by a reduction of chlorides and other ions. One would hardly say in these cases that a toxemia had been induced or that there was any fixation of salts. The process is probably largely one of migration due to irritation or osmotic factors.

CONCLUSIONS

It would seem from these experiments and other previous work, and from the variability of clinical cases, that the division of acute mechanical obstruction of the bowel into the two classes suggested is quite well founded. This division also accounts in part for the variable statistics of mortality as given by surgeons of equal ability.

We have learned from this work and that of other contributors in this field of research the following important deductions:

1. In high level lesions the course is more rapid and severe because the intestine here has a higher degree of irritability and distention is more rapid. Because of the anatomic construction of this area, necrosis appears more quickly from secretion and internal pressure.

2. The amount of distention of the segment, the loss of blood, the extent of trauma and distress and the circulatory instability are directly proportional to the length of the strangulated segment.

3. The type and extent of the vascular obliteration in turn has a profound effect on the degree of severity of the lesion. This is due to its influence on the production of the distended necrotic state of the bowel.

4. Death from a shock complex can be produced in the absence of bacteria from the involved intestine if the lesion is extensive. However, in this purely experimental condition the remote effect from the traumatized intestinal tract must not be forgotten.

5. In short segments and in those in which gangrene develops more slowly and with its ever present injured mucosa, absorption of the toxic bowel content and necrotic tissue takes place. Intoxication and shock to a lesser degree are both manifest.

6. Rupture is usually dependent on the rapidity of the distention and the necrosis of the segment.

7. Should the case be allowed to progress past the twenty-four hour period, fluid and chloride loss may be a complicating factor.

TREATMENT

While it is quite a simple task to produce a complete obstruction of the gastro-instestinal tract experimentally and to maintain life on a fairly normal plane in the virtual absence of treatment, I hope that no one will interpret this finding unwisely. This fact is not an indication for surgical procrastination in either simple obstruction or strangulation seen clinically.

Such prolongation of life is not possible in strangulation cases except by the experimental prevention of absorption from small segments of devitalized intestine. In the slowly developing lesions of this class the early symptoms may be similar to simple occlusion, and hesitation may spell tragedy. In the more extensive lesions, of course, there can be no doubt about the immediate surgical exigency. Fortunately, because of the exacting research of recent years, most physicians have come to realize that mechanical obstruction is a condition amenable to surgical treatment only, and for this reason earlier intervention will soon help reduce the unusually high mortality.

The anesthetic of choice is local or local and combined. This anesthesia will not only prevent shock in borderline cases, but does not have a deleterious effect on the bowel in the presence of an impending paralytic state.

On first observation of the case, as in appendicitis, fluid should be discontinued by mouth. This procedure will prevent loss of fluid and unnecessary chloride depletion. It will also decrease distress and reduce the possibility of perforation. For the same reasons, cathartics should never be given. These procedures are the logical deductions from many experimental studies and clinical observations.

Delay of hospitalization and preparation for surgery should not be tolerated; consequently morphine, which has been an excellent drug in our hands, should not be given until this procedure is started.

In simple occlusion the relief of the obstruction and the prevention of any impending complication is the first surgical duty. The question of the removal of accumulated material above the obstruction appears to be a much controverted point. Dragstedt, Moorhead and Burkey [9] and others have shown by different methods that significant absorption or effect of toxic obstruction material cannot be demonstrated when it is subjected to the action of a normal undistended mucosa. We have often observed and proved this in many ways. If any intestinal injury is evident, however, it is wise to drain off this material. W. B. Holden,[10] who has been a source of inspiration in much of this work, strongly advocates this procedure. He has described a very simple and efficient way of accomplishing it. His low mortality rate of 6 per cent in his own cases, I believe, however, is due largely to accurate diagnosis and early surgery.

The value of enterostomy for postoperative drainage is of very questionable value from my study. If used for slow administration of physiologic solution of sodium chloride and for occasional flushing it appears to be of some benefit. The experiments of Walters and his associates on duodenal fistulas and my own in segmental drainage would also seem to show its untoward effect when used for continual drainage. Van Buren and Smith [11] have recently questioned its efficacy, as its use does not appear to affect the mortality rate.

In strangulation cases, the excision of the necrotic segment by the gun barrel method, as advocated by several, has given the best results. In all cases from 1 to 3 per cent saline and dextrose, as advocated by

10. Holden, W. B.: Intestinal Obstruction: Survey of One Hundred and Thirty-five Personal Cases; Arch. Surg. **13**: 882-886 (Dec.) 1926.
11. Van Buren, T. T., Jr., and Smith, Beverly: The Status of Enterostomy in the Treatment of Acute Ileus: A Statistical Inquiry, Arch. Surg. **15**: 288-297 (Aug.) 1927.

Haden and Orr [12] to restore fluid and salt balance and to act as tissue sparers should be used. In cases complicated by nephrosis, these substances are also of great value, as pointed out by Brown and his associates,[13] largely because of their diuretic and dilution effects.

The blood pressure in the strangulation group will be found to be greatly lowered. It should be watched closely from the start. Antishock measures, including blood and acacia transfusions, should be instigated at once. In both the simple and the strangulation cases it will be seen that the treatment is directed primarily at the lesions caused by the obstruction and secondarily at the obstruction itself. This arrangement agrees ideally with what one should expect from the experimental observations just discussed.

CHEMICAL FACTORS IN THE TOXEMIA OF INTESTINAL OBSTRUCTION *

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The characteristic chemical changes in the blood in acute pyloric and upper intestinal tract obstruction are an increase in the nonprotein nitrogen, a decrease in the chlorides, and a rise in the carbon dioxide combining power of the plasma. These observations serve as an index of the profound disturbance taking place in the tissue cells and fluids of the body. The rise in the nonprotein nitrogen of the blood is probably due to two factors: (1) the concentration of the blood plasma from the great fluid loss, and (2) the great increase in tissue destruction taking place as shown by the marked increase in nitrogen excretion.[1] The protein destruction may result from the dehydration of the tissue cells or possibly from the action of some circulating toxic factor.

The fall in chlorides is partly due to the loss of chloride as hydrochloric acid through vomiting. Dragstedt [2] has shown that the toxic element in obstruction fluids causes a marked increase in gastric, pancreatic and intestinal secretions. Hence, the increased secretion into the stomach and intestine is a factor in the chloride loss as well as the vomiting. We have observed also that animals with the characteristic toxemia in which vomiting is prevented, as by obstruction of the cardia, have a polyuria with increased chloride excretion. Gamble and McIver,[3] White and Bridge,[4] and Atchley and Benedict [5] have shown that the chloride lost from the blood and tissues can be accounted for in the urine and in the gastric and intestinal secretions. These observations render very unlikely our original hypothesis that the fall in blood chlorides is partly due to a combination of the chloride ion with some toxic body in a process of detoxication.[6]

In a study of the chloride content of the liver and muscle, we found a definite decrease after obstruction of the pylorus or jejunum.[7] White and Bridge [4] have confirmed these observations and noted that the tissue content closely parallels the chloride content of the blood. These facts are definite evidence against the retention of the chlorides in the body. Although a true detoxicating function of the chlorides is very unlikely, it is still possible that the low chloride content of the blood and tissues may be the most important factor in the toxemia. After temporary obstruction of the pylorus, the characteristic toxemia continues as long as the blood chlorides are low, even with normal kidney excretion. In several other analogous toxemias, such as lobar pneumonia, x-ray intoxication and burns, observations of the blood are similar without a demonstrable reason for the chloride loss.

In the toxemia there is a greater loss of chlorine than of sodium. The excess sodium combines with carbonic acid to form sodium bicarbonate, which is measured by the carbon dioxide combining power of the plasma. The level of the carbon dioxide combining power is very variable since it depends on the rate of formation, the rate of excretion and the neutralizing effect of other acids formed in the course of the intoxication.

Dehydration is a constant finding in upper gastrointestinal tract obstruction. This may be measured by the hematocrit readings, which show an increase in the percentage of blood cells, and the determination of the protein content of the plasma. There is also a marked increase in the blood fibrin, the formation of which is much accelerated in any condition in which there is tissue injury.[8]

As a result of the intoxication and dehydration, other changes take place which may be important factors in the development of symptoms and death. The vicosity is increased, thus impairing the circulation and interfering with oxygenation of the blood.[9] The sedimentation test shows a marked decrease in the suspension stability of the blood cells, emphasizing the change taking place in the physicochemical state of the blood.[10] The sedimentation rate is affected more quickly than is the level of the chlorides or nonprotein nitrogen. There is a rapid fall in the oxygen content of the venous blood probably largely the result of dehydration and increased viscosity with consequent slowing of the blood flow.[11]

This brief review of the chemical observations in upper intestinal tract obstruction shows the widespread character of the changes taking place in all tissues of the body, influencing vitally the chemical processes necessary to maintain normality and life.

We have shown that the changes in the blood noted can be prevented and life prolonged until death results from starvation and exhaustion by the administration of water and sodium chloride.[6] Distilled water, solutions of dextrose and other salts, such as sodium bicarbonate, sodium bromide, ammonium, potassium, calcium and magnesium chloride and the iodides, do not have such an effect.[12] It therefore seems that the

12. Haden, R. L., and Orr, T. G.: Obstruction of the Jejunum: The Effects of Sodium Chloride on the Chemical Changes in the Blood of Dogs, Arch. Surg. **11**: 859-882 (Dec.) 1925.
13. Brown, G. E.; Eusterman, G. B.; Hartman, H. R., and Rowntree, L. G.: Toxic Nephritis in Pyloric and Duodenal Obstruction: Renal Insufficiency Complicating Gastric Tetany, Arch. Int. Med. **32**: 425-455 (Sept.) 1923.

* From the University of Kansas School of Medicine.
* Read before the Section on Surgery, General and Abdominal, at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

1. Haden, R. L., and Orr, T. G.: J. Exper. Med. **45**: 433 (March) 1927.
2. Dragstedt, L. R.: Proc. Soc. Exper. Biol. & Med. **25**: 239, 1928.
3. Gamble, J. L., and McIver, M. A.: J. Clin. Investigation **1**: 531 (Aug.) 1925.
4. White, J. C., and Bridge, E. M.: Boston M. & S. J. **196**: 893 (June 2) 1927.
5. Atchley, D. W., and Benedict, E. M.: J. Biol. Chem. **75**: 697 (Dec.) 1927.
6. Haden, R. L., and Orr, T. G.: J. Exper. Med. **38**: 55 (July) 1923.
7. Haden, R. L., and Orr, T. G.: J. Exper. Med. **44**: 435 (Sept.) 1926.
8. Haden, R. L., and Orr, T. G.: J. Exper. Med. **45**: 427 (March) 1927.
9. Haden, R. L., and Orr, T. G.: J. Exper. Med. **44**: 419 (Sept.) 1926.
10. Haden, R. L., and Orr, T. G.: J. Exper. Med. **44**: 429 (Sept.) 1926.
11. Haden, R. L., and Orr, T. G.: J. Exper. Med. **46**: 709 (Nov.) 1927.
12. Haden, R. L., and Orr, T. G.: J. Exper. Med. **39**: 321 (Feb.) 1924.

sodium chloride and water are necessary to prevent a fatal alteration in the chemistry of the blood and the tissues.

The true significance of these chemical studies is the realization that acute upper intestinal tract obstruction cannot be treated logically and efficiently unless due consideration is given to the chemical changes taking place in the blood. These studies have led directly to the recognition that a sufficient quantity of water and sodium chloride is imperative to combat the dehydration and toxemia incident to such obstruction.

[EDITORIAL NOTE.—This paper, together with that of Dr. Foster, which precedes it, and the paper of Drs. McIver and Gamble, to appear next week, constitutes a symposium on intestinal obstruction. The discussion will follow the paper to be published in our next issue.]

INTRADERMAL (INJECTION) VACCINATION

IS ITS SUITABILITY FOR GENERAL USE ESTABLISHED?

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It has been 130 years since Jenner published his original article entitled "An Inquiry Into the Causes and Effects of the Variolae Vaccinae." Following this publication, vaccination against smallpox was more or less generally employed throughout the civilized world and its value has been firmly established. Yet no standard or generally accepted method of vaccination has been adopted—quite the contrary, in fact, has been the situation in the United States, where a great variety of vaccination procedures have been introduced. A review of the literature on vaccination for the last fifty years reveals many methods put forth, which were advocated as being improvements over existing methods for this or that reason. Many of the so-called improvements were based on preconceived ideas rather than on adequate comparative tests.

These different and often contradictory recommendations, coupled with the fact that many medical schools have given very little attention to the teaching of the actual technic of vaccination, have naturally led to the employment of varied procedures of vaccination, all of which are not equally satisfactory.

It is desirable that the search for improved methods of vaccination be continued; but if we are to avoid the errors of the past, it is essential that the advocates of new procedures realize the responsibility which is theirs and that new methods be proved by adequate comparative tests to be equal or superior in results to the better of the established methods before they are recommended to displace them. The superiority should be demonstrated not alone in the percentage of "takes" but in the character of the local and general reactions and in the relative freedom from complications. Methods for general adoption should also be relatively free of the possibility of error which might prove harmful to the patient. Bearing these criteria in mind, let us consider the grounds on which some have recently advocated the general employment of a type of the intradermal method.

Toomey and Hauver[1] of Western Reserve University have recently published an article based on 2,852 primary and eighty-two secondary vaccinations performed by injecting virus intradermally, and their conclusion is as follows: "Intradermal vaccination, in our experience, is the most efficient method of vaccination."

In a review of this article, Patterson[2] states that "the intradermal method of administration has so many advantages and is so clearly the most efficient method that any other should be prohibited for group application."

Not only is this statement a wholly indefensible recommendation for arbitrary control of medical practice, but it goes much farther than do Toomey and Hauver in the original article since, through the suggestion that any other method should be prohibited, it implies that the method is not only efficient but also the most desirable for group use. And this in spite of the fact that the original article makes no mention of any comparative tests using the same virus and any well established technic. One hundred and fifty children over 2 years of age were vaccinated by the intradermal method and at the same time by a method not described, but called the "scratch method." The virus for these tests was, however, diluted, a procedure not recommended for cutaneous vaccinations with American virus. Synchronous vaccinations of the same individual are, moreover, hardly a suitable procedure for determining the relative suitability of different methods, since there is a possibility of the "takes" influencing one another and, of course, there is no way of apportioning any general reaction to the respective methods. The advantages claimed by Toomey and Hauver for the method are as follows:

1. There is less pain associated with this method, as the operator punctures once instead of scratching or puncturing several times.
2. A definite predetermined amount of vaccine can be injected, and none of the injected material is lost. The large sloughing of the secondarily infected ulcer which frequently follows the scratching methods is unusual in this type of vaccination.
3. This method can be used in certain skin diseases in which scratch methods of vaccination might be contraindicated, as in eczema, erysipelas and other conditions.
4. Playing children do not need to have a bandage to keep the dirt and infection out, as the skin automatically closes after the puncture by the needle, retaining the material, keeping out infection and cutting down the possibilities and discomforts of a sticky sore.
5. The intradermal method produces vaccinations in persons who previously have been unsuccessfully vaccinated, and a clear-cut reaction of immunity is much more easily obtained by this method in persons who previously have been vaccinated successfully.
6. The skin may be cleaned by any chemical before vaccination without killing the virus.
7. It is the best method for large groups from a time-saving standpoint.

These may be considered in the order presented:

1. Actual test reveals that the pain of the method is not due chiefly to the puncture of the needle but largely to the distention of the tissue by the injected fluid.

2. That a predetermined amount of vaccine can be injected without any being lost is only to be considered advantageous in the light of better results and, as has been pointed out, comparative tests with any of the

1. Toomey, J. A., and Hauver, R. B.: Intradermal Vaccination, Am. J. Dis. Child. **35**: 186-192 (Feb.) 1928.
2. Patterson, R. S.: Am. J. Pub. Health **18**: 542, 1928.

better of the cutaneous technics [3] were not described. It might be conceded that the statement regarding the occurrence of sloughing is probably true when comparison is made with certain inferior methods, such as those involving a large scarification dressed with a shield or a bunion pad; but one could hardly accept the intradermal method as superior to the multiple pressure method in this regard without proper proof.

3. Beyond the fact that the work was done in hospital cases there is nothing in the article to indicate that the method was actually tried in a single case of eczema, erysipelas or other skin condition. It might be noted, however, that at the Herman Kiefer Hospital in Detroit,[4] in 1923 and 1924, some 3,346 hospital patients (including ninety with erysipelas, two with impetigo, four with scabies and one with pemphigus) were vaccinated by cutaneous methods, and it is stated that in the whole series there were no ill effects. The report, however, does not state the proportion of primary vaccination in the series.

4. It is simply pointed out that the use of a bandage is neither necessary nor desirable in uncomplicated cutaneous vaccinations.

5. This contention of the writers is borne out by the work of Force [5] and Wright,[6] and is what might be expected when it is remembered that the intradermal method as advocated by Toomey and Hauver provides for the injection (0.1 cc. of 1:4 dilution), according to the estimation of von Groeer [7] of about 2,500 times the amount of virus introduced through a Pirquet drill excoriation. It should not, however, be inferred that this increased dosage would necessarily lead to a markedly higher percentage of takes in primary vaccinations since, in a favorable soil, provided a certain minimal dose is exceeded, virus is capable of infinite multiplication. Larger doses tend to lead simply to earlier and more severe reactions than do smaller amounts of the same virus inoculated by the same method.

From the vaccinator's standpoint, 6 and 7 are worthy of some consideration in a comparison of methods, but they should weigh only in case the methods have been proved equally satisfactory from a patient's standpoint.

Toomey and Hauver have noted two objections to the method, as follows:

1. "It takes a little time to prepare vaccine material," but, they state, "the advantages clearly outweigh this disadvantage."

2. "The vaccine may be delivered too deeply."

It is noted that the authors do not make any mention of the theoretical objections to the introduction into or beneath the skin of a relatively large quantity of material which is not always sterile. That this objection is not entirely theoretical is indicated by the fact that there occurred in their series "eight cases of secondary infection with the formation of local abscesses." They furthermore state, "Practically all our patients have had some fever starting as early as six days or as late as fourteen days after vaccination, and lasting from one to four days with systemic reactions often sufficient to cause the persons vaccinated to go to bed and to cause a rise of temperature, in many cases as high as 104 F." The authors fail to mention the large number of "pseudo or atypical reactions" among the disadvantages, a point of importance at a time when we are beginning to learn how to interpret reactions following the inoculation of vaccine virus.

While Toomey and Hauver have not considered the danger from a possible error in dosage as a disadvantage of the intradermal technic, their article furnishes an example of this fact. In their original paper the dosage is given as "1 cc. of a one to four dilution from bulk or capillary vaccine." In a reprint of this article it is noted, among other changes, that the dosage is given as 0.1 cc. of the same dilution. It is true that cutaneous methods are open to the same relative variation of dosage but the absolute quantity of virus introduced even through the largest scarification is indeed small.

It should be mentioned that I myself have not had any experience with the intradermal technic in man and that I have no preconceived objections to the method. On the contrary, I have only encouragement for those who would scientifically test its merits. One cannot but rebel, however, when a man in a position of influence advocates arbitrarily "scrapping," at least for group vaccinations, the experience of 130 years in favor of a comparatively untried method, especially when the only advantage offered for the new method in group as compared to individual vaccinations is the saving of a little time for the vaccinator.

We furthermore regret that Toomey and Hauver have permitted certain errors to appear in their original article, which can hardly be assumed to be typographic in nature, and that they have given so much attention to expounding the efficacy of their method to the exclusion of other equally important considerations involved in selecting a suitable vaccination procedure for general use. Vaccination against smallpox is the most valuable immunizing procedure possessed by man and unless the advocates of new vaccination procedures involving radical departures from established practices present strictly scientific evidence of their superiority, the profession will probably act wisely by continuing to employ some well tried, satisfactory, conservative method, such as the multiple pressure technic. Otherwise much harm may result.

The multiple pressure [8] method has been used in thousands of vaccinations performed by various vaccinators in different parts of the country and has successfully met the requirements here set forth of a satisfactory method. With this method the insertion is made through a drop of virus by pressing the side of the needle point rather firmly against the taut skin and raising and lowering it from twenty to thirty times. The pricks should cover an area never more than one-eighth inch in greatest diameter. The virus is wiped off immediately and, as the trauma is scarcely visible, the uselessness of a shield or dressing, which may lead to unsatisfactory results with any method, is apparent to the person vaccinated. This method gives a typical vesicle of maximum firmness, since the procedure neither removes nor destroys the epidermis and thus, as shown by experience, there is little chance of accidental infection.

Hygienic Laboratory.

3. By the better cutaneous technics it is intended to include those which employ an insertion never more than one-eighth inch in its greatest diameter, which is made by some method which does not remove or destroy the epidermis. The multiple pressure technic as advocated by Dr. J. P. Leake (Pub. Health Rep. **42**: 221-238 [Jan. 28] 1927) has proved so admirable that it will be used throughout this paper as representative of the best cutaneous methods.

4. Smallpox: City Health, Detroit Department of Health **8**: 38 (April-May) 1925.

5. Force, J. N.: Pub. Health Rep. **42**: 1031-1044 (April 15) 1927.

6. Wright, L. T.: Intradermal Vaccination Against Smallpox, J. A. M. A. **71**: 654-657 (Aug. 24) 1918.

7. Von Groeer: Die Dermoreaktionen, in Abderhalden; Handbuch der biologischen Arbeitsmethoden, part 13, Berlin & Vienna, Urban and Schwartzenberg, p. 432.

8. Leake, J. P.: Pub. Health Rep. **42**: 221-238 (Jan. 28) 1927.

LEIOMYOSARCOMA OF THE UTERUS

IDENTITY, MALIGNANCY AND TREATMENT *

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The term leiomyosarcoma implies sarcomatous changes in a tumor composed chiefly of relatively histologically mature but physiologically immature unstriped muscle cells. The type of tumor under consideration is also referred to by various pathologists as leiomyoblastoma, myosarcoma, myoma malignum and highly cellular myoma. The several names used to designate the same neoplasm evidently depend to a large extent on the individual pathologist's interpretation of the cellular picture, and his conception of its actual or potential malignancy. Corscaden [1] has recently said: "The development of sarcoma in a myoma is to me an academic and not a clinical problem. Despite the report of bizarre microscopic pictures, called sarcoma by many investigators of myomatous tissue, the autopsy rooms still remain as empty of women dead of sarcoma of the uterus as they did in the years before hysterectomy was so universally performed." Most physicians of experience will admit that primary sarcoma of the uterus is rarely encountered, even in large gynecologic clinics. Nevertheless, it is a distinct shock to receive a report from the laboratory, several days after performing a hysterectomy for an apparently innocuous fibroid, conveying the suggestion that the growth has malignant characteristics. From the clinical standpoint, a malignant process entails the concomitant penetration and destruction of normal tissue with the ultimate jeopardy of life itself, and a conscientious operator would not apply the same technic for the removal of such a growth as for a benign tumor. It does not seem legitimate for a pathologist to imply that a specimen is malignant unless it actually is. Conversely, any of the clinical earmarks of a malignant condition imposes an obligation on the surgeon to exercise meticulous care in his efforts to eradicate the disease, so that a radical rather than a conservative operation will be performed.

My interest was stimulated by the laboratory report of four cases of leiomyosarcoma of the uterus in the gynecologic pathologic conferences at the New York Post-Graduate Hospital in a period of three months (November and December, 1926, and January, 1927). Since only two cases of sarcoma of the uterus (one primary mural sarcoma and one sarcoma of the mucosa of Virchow) had been encountered in the previous ten years, although 1,854 operations for fibromyomas had been performed during this period, this coincidence seemed almost like an epidemic. In all four instances a preoperative diagnosis of fibromyoma had been made, and in three a supravaginal hysterectomy had been performed. Two patients were operated on by Dr. James N. West, one by Dr. H. Dawson Furniss, and one by myself. The specimen removed from another patient in October, 1927, by Dr. Frank M. Ende was also reported as a leiomyosarcoma and is included in this report. I am indebted to these surgeons for their courtesy in permitting me to utilize their case records.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

1. Corscaden, J. A.: New York State J. Med. **27**: 1129 (Oct. 15) 1927.

REPORT OF CASES

CASE 1.—*History.*—Mrs. B. A., aged 44, a nullipara, with irrelevant family and previous personal history, menstruated normally until four years before examination, when the flow gradually and persistently increased in amount. For the past few months the flow had been extremely profuse and accompanied by large blood clots. There had not been metrorrhagia at any time, and the patient did not complain of any other symptoms of consequence except nervousness and slight dyspnea on exertion. On pelvic examination a tumor the size of a grapefruit involving the entire uterus was found filling the pelvis. A diagnosis of fibromyoma of the uterus was made. Supravaginal hysterectomy, left salpingo-oophorectomy and appendectomy were performed.

Pathologic Report.—The specimen consisted of a globoid, supracervically amputated uterus, measuring 8 by 9 by 7.5 cm. Within the wall of the fundus was a large, spherical, hard, pale gray, encapsulated, coarsely fasciculated projecting tumor, 6.5 cm. in diameter. A smaller similar tumor was embedded in the wall nearby. There was also a small lenticular tumor nodule above the cervix. The endometrium was slightly thickened and pale.

The tube measured 4 by 0.7 cm.; the ovary, 4.5 by 2.5 by 2 cm. The surface of the ovary was coarsely wrinkled. At one pole was a corpus luteum, 1.2 cm. in diameter. At the opposite pole was a cyst, 2 cm. in diameter, possessing a narrow, pale yellow cortex, and lined by smooth pale yellow mucous membrane. The serous surface of the mesosalpinx of the tube was studded with pin-head sized grayish translucent nodules, resembling cysts.

The appendix measured 5.6 by 0.8 cm. in the proximal half, and 0.4 cm. in the distal half. The serosa was coarsely injected. There was an abundant fatty meso-appendix. The lumen was obliterated toward the tip and much narrowed elsewhere.

The large tumor consisted of fairly well developed smooth muscle cells with comparatively little fibrous stroma. There was considerable variation in the size and shape of the nuclei of the cells, and in places mitotic figures were found without difficulty. The tumor contained many large crescentic blood vessels. The endometrium was edematous and the glands were wide.

The ovary contained a well marked corpus luteum. The cyst possessed a cortex of small lutein cells, inside of which was a narrow zone of granulation tissue and organizing fibrin. The fallopian tube showed atrophy.

The appendix was sclerosed, and there were many large lymph vessels filled with lymphocytes in its wall. There was no exudate.

The pathologic diagnosis was: leiomyosarcoma of the uterus; corpus luteum cyst of the ovary; healed appendicitis.

The diagnosis of leiomyosarcoma was submitted in this case on the basis of incomplete differentiation of the tumor cells, rapid multiplication of these cells, and marked vascularity of the tumor. The actual malignancy was probably not great in this case, but the danger should be borne in mind.

CASE 2.—*History.*—Mrs. D. F., aged 47, a nullipara, menstruated normally until four months before examination, when the intermenstrual intervals had been shortened from four to three weeks, and the flow had been abnormally profuse and prolonged. She had suffered from nervousness for the past year, and had had hot flushes for the past ten days. There was nothing else significant in the history. On pelvic examination the uterus was found to be irregularly enlarged to the size of an orange, a number of hard globoid tumors being palpable. A diagnosis of fibromyoma of the uterus and of impending menopause was made.

Panhysterectomy and appendectomy were performed.

Pathologic Report.—The specimen consisted of an opened, supracervically amputated uterus, with the adnexa attached. It was ovoid, 15 by 12 by 10 cm., and was soft and nodular. It bore two pedunculated, hard, subserous tumors, flattened ovoid and measuring, respectively, 3 by 2 by 2 cm. and 6 by 4 by 4 cm. There were numerous intramural tumors, varying from a few millimeters to 4.5 cm. in diameter. Just above the line of amputation was a somewhat larger tumor, 6.5 by 5 by 5 cm. This projected from beneath the thin, reddened

endometrium as a fluctuant mass, which on section bulged sharply, and was moist, bluish gray and coarsely fasciculated. It could be cut with the finger-nail. Frozen sections showed a cellular and edematous smooth muscle tumor.

The cervix (removed after the frozen section report) did not show anything remarkable.

The appendix was curved, and measured 8 by 0.7 cm. There was a slight bulbous enlargement toward the tip, over which the serosal vessels were more prominent than elsewhere. Here the wall was somewhat thickened and the lumen narrowed.

Fig. 1 (case 2).—Low power magnification showing tumor in contrast with the uterine wall.

The supracervical tumor was composed essentially of smooth muscle cells with very edematous stroma. The tumor was of an unusual type, partly on account of the somewhat irregular distribution of the edema and partly on account of the fact that there were many cellular areas in which the tumor cells were incompletely differentiated and in which mitotic figures were found without difficulty. Sections from the margin of the tumor showed merging of the more deeply stained cellular and rapidly growing tumor tissue with the somewhat edematous but otherwise normal myometrium (fig. 1). The line of demarcation was not sharply drawn and the tumor was apparently infiltrating the tumor wall. These observations indicate a potentially malignant condition and account for the diagnosis that was returned.

The cervical glands were much dilated, and low papillary projections arose from the superficial everted glands. The mucosa was infiltrated with plasma cells, while polymorphonuclear leukocytes were contained in the mucoid contents of the cystic glands.

There was sclerosis of the appendix, characterized by narrowing of the lumen and moderate fibrous increase in the wall. The changes were most marked in the serosa and outer muscularis, where a few lymphoid cells could be found around the vessels.

The pathologic diagnosis was: leiomyosarcoma of the uterus; chronic endocervicitis; healed appendicitis.

CASE 3.—*History.*—Mrs. J. W., aged 46, a nullipara, had noticed an enlargement of the lower abdomen and a marked menorrhagia during the year preceding examination. She had no other complaints. On pelvic examination, an irregular hard mass, the size of a child's head, was found filling the pelvis and extending well above the pelvic brim. A diagnosis of fibromyoma of the uterus was made.

Supravaginal hysterectomy (morcellement), intraligamentous cystectomy, and right salpingo-oophorectomy were performed.

Pathologic Report.—The specimen consisted of a large number of pieces of tissue, identified as comprising a uterus and as containing a tumor. The total bulk of the material was as large as a child's head. It was impossible to state the relations of the tumor, because of the fact that the uterus was badly torn. There was, however, one large tumor approximately 11 cm. in diameter. This tumor bulged on section and was yellowish gray. The cut surface was dimpled. The tumor appeared to be only partially encapsulated, and was soft. The endometrium, where visible, was not remarkable. The myometrium was soft, although not as soft as the tumor tissue. Numerous severed adhesions were present on the surface. There was an irregular thin membranous structure, 10 cm. in diameter, apparently representing an opened cyst, and an irregular tortuous tubular structure, 8 cm. in length. It had been opened and found to be lined with a thick yellowish gray membrane. Its diameter was 2 cm.

The large uterine tumor was very cellular and vascular. It consisted of small, closely packed leiomyoblasts, relatively few of which were more than slightly differentiated. The general type and arrangement of the cells, however, served to identify them, as well as their production of fibrils. In spite of the young type of cell which predominated, mitotic figures were seldom seen. The nuclei of the cells were relatively large, blunt and deeply stained (fig. 2). Multilobular forms and the production of tumor giant cells were occasionally found. There was very little stroma in most parts of the tumor, and that which occurred was mostly edematous in character. The tumor was permeated by large, irregular, thin walled, blood-vascular channels. In some of the sections these were distended by organizing thrombi. In one of the sections in which thrombosis was marked, the tumor was apparently more slowly growing and there was more stroma than in the rest of the tumor. A section taken from the margin of the tumor showed indistinct demarcation between the tumor tissue and myometrium.

The endometrium in general did not show a significant change, except for an increase in lymphoid cells.

The fallopian tube, united with the ovary by fibrous tissue, was notable for the presence within mucosal folds of numerous typical tubercles. Most of these contained several giant cells with laminated calcareous inclusions, but in at least one instance a conglomerate tubercle was found with typical central caseation. Endothelial leukocytes were present in the lumen of the tube.

The pathologic diagnosis was: leiomyosarcoma of the uterus; intraligamentous cyst; tuberculosis of the fallopian tube.

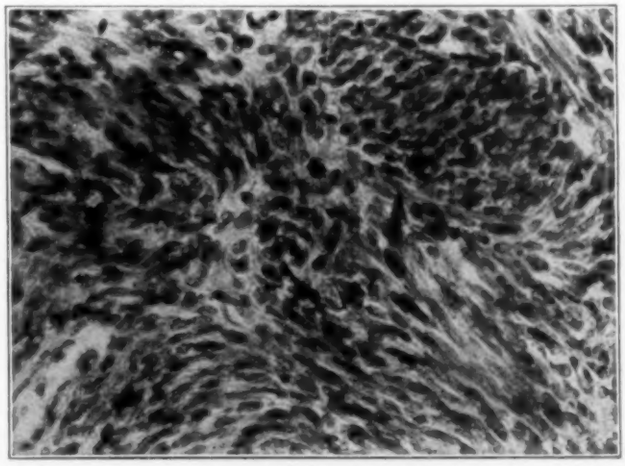

Fig. 2 (case 3).—Medium high power magnification, showing the highly cellular character of the tumor and the very large, dark hyperchromatic nuclei.

CASE 4.—*History.*—Mrs. A. H., aged 50, a nullipara, with an irrelevant previous history, had noticed a gradual enlargement of the abdomen for the past eight years. Menorrhagia had been pronounced and gradually increasing for the past two years and there had been some diurnal frequency of urination during the past year.

On pelvic examination, a large, rounded, irregular mass was discovered which practically filled the pelvis and reached nearly to the umbilicus. A diagnosis of fibromyoma of the uterus was made.

Supravaginal hysterectomy and bilateral salpingo-oophorectomy were performed.

Pathologic Report.—The specimen consisted of a large supracervically amputated uterus, measuring approximately 14 by 12 by 8.5 cm. In the right posterior wall there was a large bulging globoid tumor, 10 cm. in diameter. This tumor was pale gray, very faintly fasciculated in structure, and semitranslucent. The consistency was soft, the tumor being easily cut with the finger-nail. Arising in the fundus was a long, soft, flabby polyp, 7 by 3 by 0.7 cm., which lay in the upper part of the dilated uterine cavity. The adnexa and broad ligaments were not remarkable. A smaller intramural tumor nodule bulged beneath the peritoneal surface near the insertion of the ovarian ligaments. This was 1.7 cm. in diameter and had the appearance of an ordinary fibroid tumor.

Microscopic examination showed the large tumor to be very cellular and composed of fairly well developed smooth muscle fibers, supported by very little stroma (fig. 3). The tumor was unusually vascular but fairly well demarcated from the myometrium. Mitotic figures occurred rarely (fig. 4). Unfortunately, the tissue was not well preserved.

Sections from the endometrial polyp showed it to be composed of tortuous, elongated, moderately dilated glands, resembling those of the endometrium, and supported by an edematous vascular stroma. It did not show evidence of malignant growth.

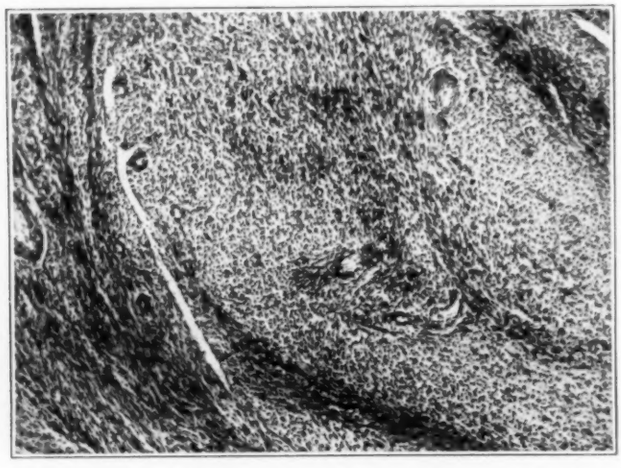

Fig. 3 (case 4).—Appearance of tumor under low power, showing its highly cellular character in contrast with the uterine wall.

The pathologic diagnosis was: leiomyosarcoma of the uterus; fibromyoma of the uterus; adenomatous polyp of the endometrium.

Case 5.—*History.*—Mrs. M. B., aged 38, a nullipara, menstruated regularly, moderately, and with but slight cramps until three years before examination, when the flow became more profuse. Two years previously she had had a severe hemorrhage. For a few months preceding examination the bleeding had been almost continuous, and backache and pain in the right lower abdominal quadrant had been constant. Two months before she was given x-ray therapy, which failed to arrest the bleeding. On pelvic examination, an irregular, hard uterine tumor was found reaching to the umbilicus. A diagnosis of fibromyoma of the uterus was made.

Transfusion of 1,000 cc. of whole blood (for severe anemia), supravaginal hysterectomy, bilateral salpingectomy and left oophorectomy were performed.

Pathologic Report.—The specimen consisted of a supracervically amputated, markedly distorted uterus with adnexa. The endometrial cavity was irregular, and a probe could not be introduced throughout its entire length. In its wall there were several very large fibromyomatous tumors, presenting grossly the usual structure of these tumors. In some places they showed yellowish discoloration. The entire specimen measured 166 by 132 by 109 mm. The adnexa were not remarkable.

Sections from the uterine tumor showed a very cellular, rapidly growing, infiltrative type of smooth muscle cell neoplasm (fig. 5). Mitotic division figures were in places very numerous (fig. 6). The surrounding myometrium was apparently penetrated, with offshoots of the tumor filling the blood vessels.

The pathologic diagnosis was leiomyosarcoma of the uterus. This appears to be an example of uterine sarcoma which might well occasion considerable doubt as to the ultimate prognosis, owing to the rapid growth and tendency to infiltrate.

X-ray examination of the thorax showed two nodular areas of infiltration, about 1 inch in diameter, in the right upper and central lung fields, suggesting tumor metastasis.

The likelihood of possible malignancy in any questionable tumor of the uterus at once suggests (1) a consideration of the preoperative diagnosis; (2) the immediate recognition of the gross pathology; (3) a study of the microscopic appearance of the tumor; (4) the surgical technic to be employed under the circumstances (which in this case revives the threadbare controversy concerning the indiscriminate sacrifice of the cervix in all hysterectomies for fibroids), and (5) the postoperative treatment of the cervical stump when it has been left.

THE PREOPERATIVE DIAGNOSIS OF SARCOMA OF THE UTERUS

In discussing the relationship of uterine myomas and sarcomas to each other, Frankl[2] says: "(*a*) The same uterus may contain a myoma and a sarcoma, entirely independent of each other; (*b*) a myoma may be destroyed by a sarcoma, which develops outside of it; most frequently, however, the sarcoma develops within the myoma, growing from the center toward the periphery, so that the myoma becomes destroyed and is replaced by the sarcoma." In thirty-eight cases of sarcoma, Frankl found evidence of preexisting myoma in twenty-two. Referring to the histogenesis of uterine sarcoma, Ewing[3] asserts that "there is not sufficient evidence to show that these tumors include any of fibroblastic origin" and that "there is little room for doubt that the entire group is of myogenic origin."

Sarcomatous transformation of fibromyoma does not manifest any pathognomonic clinical features, and its preoperative diagnosis constitutes a serious problem because of the paucity of suggestive symptoms. Sarcomas occurring in the absence of a definite preexisting myoma usually project into the cavity of the uterus as nodules, villi or "grapes," and are characterized by profuse early bleeding. A primary sarcoma of this type can be identified by a diagnostic curettage. The real nature of the tumor is not likely to be overlooked and does not require a fine discrimination in surgical judgment regarding its treatment.

THE IMMEDIATE RECOGNITION OF LEIOMYOSARCOMA OF THE UTERUS

In retrospect, it is now evident that inadequate significance was attached to certain observations made during the operations performed in the group of cases here reported. While it is not my purpose to attempt to prove at this time that all leiomyosarcomas are actually malignant, as we clinicians understand the term, it seems logical, until some reliable criteria of malignancy are established, that the patient should always be given the benefit of the doubt. Hence, when the

2. Frankl, Oskar: Tr. Am. A. Obst. Gynec. & Abdom. Surg. **37**: 146, 1924.

3. Ewing, James: Neoplastic Diseases, Philadelphia, W. B. Saunders Company, 1922, p. 205.

gross peculiarities of a neoplasm resemble those that we have noted in our cases, suspicion should be aroused and a wide and complete hysterectomy performed. These peculiarities are (1) unusual friability of the broad ligaments; (2) remarkable vascularity of the tumor; (3) absence of a sharp line of demarcation between the tumor and the myometrium; (4) difficulty in shelling out the tumor from its apparent circumscribed limits; (5) an opaque appearance on section, and (6) an edematous and sparsely fasciculated appearance of the cut surface, which is softer than that of a fibromyoma. Adequate opportunity to make all of these observations will be afforded only by adopting the practice of cutting every fibroid specimen removed by supracervical amputation before closing over the cervical stump.

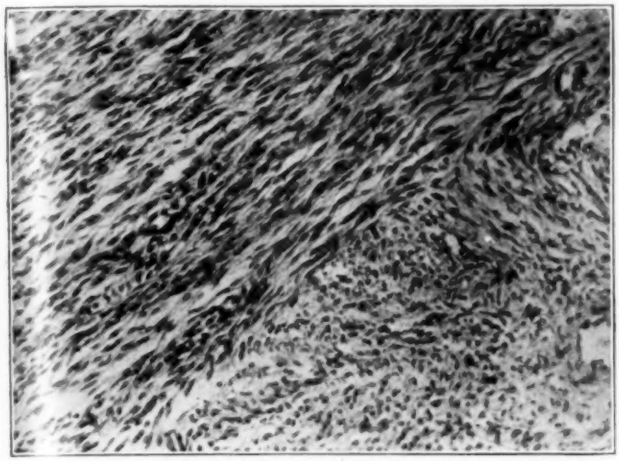

Fig. 4 (case 4).—Medium high power magnification showing mitosis (one mitotic figure is plainly seen close to the upper margin of the photomicrograph).

Gardner [4] has reported a classic case of metastatic leiomyosarcoma, primary in the uterus, which pursued a clinical course typical of malignancy; he states that "very infrequently cases of extensive metastasis to remote organs by way of the blood stream have been reported." He concludes that in the majority of cases leiomyosarcoma is only "histologically" malignant and remains within the uterine wall. Nevertheless, in justice to the patient, it seems illogical for the surgeon to attempt to differentiate between "clinical malignancy" and "histologic malignancy." In the case reported by Gardner, a supravaginal hysterectomy had been performed in October, 1913, for a tumor that was regarded and reported as an ordinary fibromyoma, but which after the patient's death was microscopically diagnosed as a leiomyosarcoma. In December, 1914, several nodules removed from the back proved to be leiomyosarcomas. Later in the same month a spinal cord tumor of a similar nature was excised. These operations were followed by further metastases and the patient died in November, 1915. At autopsy, leiomyosarcomatous metastatic tumors were found in the back, breast, abdominal wall, lumbar region, lungs, liver, pelvis, orbit and spinal cord.

Granting that cases of this sort are rarely encountered, it seems to me that our surgical responsibilities involve an immediate recognition of such a possibility in all cases of myosarcoma.

4. Gardner, L. U.: Metastatic Leiomyosarcoma, J. M. Research 36: 19 (March) 1917.

THE MICROSCOPIC MANIFESTATIONS OF LEIOMYOSARCOMA

Many pathologists have investigated the question of malignant transformation of myomatous tumors and have expressed their views in the literature. Hence, a comprehensive recapitulation of the microscopic changes would be superfluous in this paper.

Aschoff [5] has said of myosarcomas:

> These are histologically benign tumors, which occasionally rupture into vessels. . . . Whether such tumors should be considered as malignant is not worthy of dispute, for all gradations occur between benign and malignant tumors. In some cases the malignant character of the neoplasm in the uterus and its destructive action in the surrounding tissues is very marked. The tumor cells not only displace but infiltrate the myometrium and destroy the muscle cells.

It was early recognized that after operation apparently benign tumors would recur in an occasional case. Metastases occur late in well circumscribed tumors, but, when the parametrium is invaded, secondary growths may be expected in the regional areas and elsewhere. The structure of uterine sarcomas varies considerably in different cases, including spindle cell, round cell, giant cell and mixed cell characteristics. That the potential malignancy has a distinct relation to the cell type must be conceded, and all transition phases of muscle cells to malignant cells may be noted in different tumors or in the same tumor. The personal equation cannot be disregarded in the interpretation of the histologic picture in a particular case, some pathologists regarding the clinical importance of highly cellular tumors in a far more serious light than others.

In referring to myoma malignum, Ewing says:

> In a group of cases now rather numerous, leiomyoma has proved malignant, breaking its natural boundaries and producing metastases in the liver, lungs, kidney, peritoneum and lymph nodes, and thereby acquiring the designation myoma malignum. . . . I have encountered three malignant uterine myomas with general metastases in twenty years.

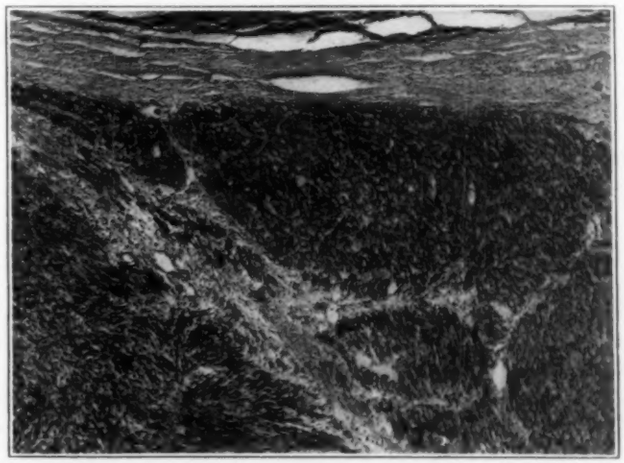

Fig. 5 (case 5).—Low power aspect of a very cellular portion of the tumor, depicting variations in the size and staining qualities of the nuclei. Mitotic figures are very numerous.

Undifferentiated cells with irregular or deeply staining nuclei, and a decrease or absence of stroma cells, are characteristic of leiomyosarcoma but are not necessarily of clinical importance. Probably the numerical incidence of mitotic figures may be accepted as a fairly reliable index of the malignancy of a particular

5. Aschoff, L.: Pathologische Anatomie, Jena, 1912.

tumor. Evans [6] has selected the standard of 2,200 to 12,000 mitotic figures for each cubic millimeter of tissue as being indicative of clinical malignancy, establishing this criterion after a painstaking research of the material from a series of seventy-two cases of malignant myoma occurring in 4,000 operations for uterine mural tumors. He states that numerous mitotic figures of unusual form and gigantic size are unquestionably always a sign of high grade malignancy. He does not regard the mere presence of numerous giant cells, even in large numbers, without the appearance of mitotic figures, as a manifestation of malignancy. Ordinary fibromyomas differ in structure in various portions of the same tumor, but these changes do not necessarily indicate progression or sarcomatous metamorphosis.

THE SURGICAL TREATMENT OF LEIOMYOSARCOMA OF THE UTERUS

With a due regard for the possibility of sarcomatous changes in all cases of mural uterine tumors, the operator should invariably cut the specimen before leaving and closing over the retained cervical stump. If any part of the tumor or tumors appears to be

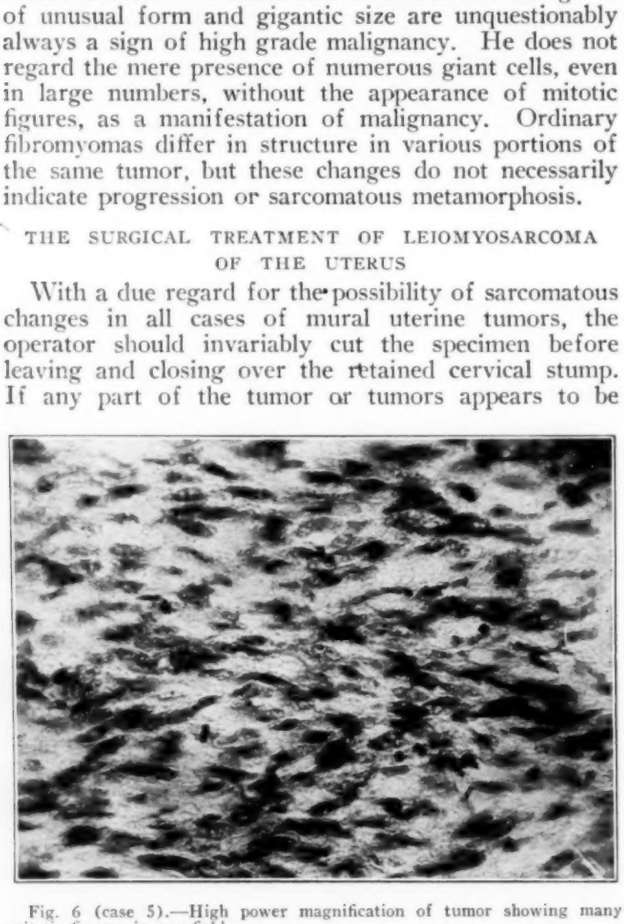

Fig. 6 (case 5).—High power magnification of tumor showing many mitotic figures in one field.

invading the myometrium, if the cut surface is soft and can be cut with the finger-nail, if the tumor is unusually vascular, if the striations of the cut surface are faintly delineated, or if the tumor looks edematous but no fluid drips from it, the cervix should be removed. I am one of those who still adhere to the practice of leaving the cervix in married women unless there is some definite indication for its extirpation. But the hysterectomy should certainly be wide and complete in every case in which the slightest suspicion of a malignant condition can be legitimately entertained.

POSTOPERATIVE TREATMENT OF THE REMAINING CERVICAL STUMP

Assuming that the diagnosis of leiomyosarcoma is reported by the pathologist several days after a supracervical hysterectomy, one is confronted with the problem of dealing with the neglected stump. It may be left alone, removed at a secondary operation, or treated by irradiation. In those cases in which the level of amputation is definitely below the lower limits of the growth, in which the tumor does not show a tendency to invade the parametrium, and in which the mitotic figures in the histologic slides are comparatively few, expectant treatment is justified. In all others, an intracervical application of radium would seem to be preferable to surgical removal of the stump, first, because a secondary operation might scatter malignant cells still further through the blood vessels and lymphatics; secondly, because the patient would be subjected to a greater hazard by surgery than by irradiation, and, thirdly, because irradiation is considered to be the most effective method of treatment of malignant involvements of the cervix.

6. Evans, Newton: Surg. Gynec. Obst. **30**: 225 (March) 1920.

SUMMARY

1. Various types of sarcomatous cellular transformation occur in a small percentage of uterine mural tumors.

2. Leiomyosarcomas do not initiate pathognomonic clinical symptoms.

3. A leiomyosarcoma should be suspected when a uterine neoplasm presents unusual friability of the broad ligaments, remarkable vascularity of the tumor, absence of a sharp line of demarcation between the tumor and the myometrium, difficulty in shelling out the tumor from its apparent circumscribed limits, an opaque appearance on section, and an edematous and sparsely fasciculated appearance of the cut surface, which is softer than that of a myoma.

4. All uterine mural tumors should be cut and inspected during hysterectomy, before one decides to leave the cervix.

5. It is illogical for the surgeon to attempt to differentiate between "histologic" malignancy and "clinical" malignancy.

6. The numerical incidence of mitotic figures may be accepted as a fairly reliable index of the malignancy of a particular tumor.

7. The hysterectomy should be wide and complete in every case in which the slightest suspicion of malignancy can be legitimately entertained.

8. When the cervix has been left inadvertently, and further therapeutic measures seem desirable, radium therapy is preferable.

580 Park Avenue.

ABSTRACT OF DISCUSSION

DR. HENRY SCHMITZ, Chicago: The question of leiomyosarcoma should be investigated by the pathologist and the gynecologist. These tumors appear to be relatively benign. It is obvious that a large number of myomas have been treated by irradiation in which a microscopic examination was not made and that there must have been leiomyosarcomas among these cases. At the same time, it is also obvious that the radiation dose applied would be too small to arrest such a sarcoma if it were present. However, I feel that the observation is a very important one and that it should be subjected to corroborative investigation in other clinics in order to evaluate its clinical importance.

DR. EMIL NOVAK, Baltimore: While I agree with Dr. Schmitz that most of these cases are of a low degree of malignancy, I think it should be emphasized that a certain proportion, for some unexplainable reason, are very malignant. I recall two cases within the past few years illustrating this fact. In one case a large fibroid was so adherent to the intestine that a portion of its capsule was left on the latter. The tumor was not opened in the operating room, as it should have been. The laboratory study showed extensive sarcomatous degeneration, and the patient died of a sarcomatous metastasis to the brain before she left the hospital, a matter of weeks. The other case was of essentially the same type. The point that cannot be emphasized too strongly is the importance of cutting open the uterus and the tumors before the specimen leaves the operating room. There are two reasons for this. First, in a large

proportion of cases we can make a presumptive diagnosis of sarcomatous degeneration with the naked eye. The cut surface has a soft raw-pork appearance, which ought always to make us suspicious, although it may be simulated by the advanced hyaline degeneration. In the outspoken case, however, there is little possibility of error. Second, in a certain number of cases in which preceding curettage has not been done, bleeding, which has been thought to be due to the presence of the fibroids, may really be due to an adenocarcinoma concealed within the uterus. There are certain borderline cases in which some pathologists will diagnose sarcoma, while others will interpret the picture as merely myoma of very cellular type. Mitotic figures, while not in themselves pathognomonic of malignancy, are of great importance in this particular field. Benign myomas almost never show any mitotic figures. When they are present in any considerable number, therefore, one can be almost certain of the malignant nature of the tumor. For that matter, as indicated by the report from the Mayo Clinic to which Dr. Dannreuther has referred, the number of mitoses is a fairly good indication of the degree of malignancy of the tumor.

DR. WALTER T. DANNREUTHER, New York: The important point emphasized by Dr. Novak is the differences of opinion held by various pathologists concerning the same slides. A significant fact which I did not mention in my paper is that all these cases were reported soon after a change in pathologists.

URETERAL STRICTURE AS A COMPLICATION IN CANCER OF THE CERVIX*

CHARLES L. MARTIN, E.E., M.D.
DALLAS, TEXAS

The value of irradiation in the treatment of cancer of the cervix can no longer be questioned. Greenough's [1] report of the conclusions of a special committee of the American College of Surgeons establishes it on an equal footing with surgery, and the rather surprising comparative figures recently published by Heyman [2] indicate that it may be superior to surgery when applied by one who is expertly trained. Even with this addition to our armamentarium, however, the fact remains that in most parts of the world less than 20 per cent of the women suffering from this malady reach the clinics in time to obtain a cure. This statement is perhaps not entirely fair since a certain percentage of those who come early are not cured either by surgery or by irradiation.

Under existing conditions about 80 per cent of the entire number must eventually succumb to the disease and it is in the care of this group that irradiation has become invaluable. The foul smelling discharge which makes the patient a repulsive object to the family has been vanquished and the depleting hemorrhage with its ensuing anemia and cachexia are no more. This brings us to the onset of pain, which constitutes the third line of offense of the enemy, and it is here that the first intimation of defeat is gained, for pain is apparently the first warning of that hidden advance of the disease which eventually brings about the death of the patient.

In previous articles,[3] stricture of the ureter has been indicated as one of the principal causes of pain in this malady, and certainly strictures of the ureters with a resulting uremia constitute the most common cause of death. The discovery of the nature of this cause of death dates back many years. Dumont [4] described a case in great detail in 1881. Rispal and Comberlan,[5] Herbiner,[6] Kummer,[7] Gotting,[8] Holzbach,[9] Myers,[10] Denslow and Campbell [11] and others have since reported similar cases. It is therefore the lateral extension of the carcinoma with its encroachment on the ureters that is most to be feared.

The pain produced by malignant stricture is not different from that produced by benign causes. Hunner's [12] description of the symptoms produced by benign ureteral stricture may easily be applied to many of the more advanced cases of cervical disease. The patients complain of pain or a nagging discomfort at the site of the stricture which may radiate upward toward the kidney, laterally into the hip or groin, posteriorly, simulating a sacro-iliac or sciatic condition, or

Fig. 1.—Section of the body cut through the broad ligament area to show occlusion of the ureter by malignant extension from cancer of the cervix.

downward into the thigh and leg either anteriorly or posteriorly. In my experience, pain in the hip of a dull, aching character is the most common early symptom. Such patients whose direct signs of carcinoma have cleared up under irradiation are frequently treated for rheumatism. The discomfort is usually intermittent at first and may be relieved by heat and acetylsalicylic

* Read before the Section on Radiology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Greenough, R. B.: The Radiological Treatment of Cancer, Surg. Gynec. Obst., part II, **44**:108-115 (May) 1927.

2. Heyman, J.: Radiological or Operative Treatment of Cancer of the Uterus, Acta radiol. **8**: 365, 1928.

3. Martin, C. L., and Rogers, F. T.: Broad Ligament Extension in Carcinoma of the Cervix, Am. J. Roentgenol. **15**: 336-344 (April) 1926. Martin, C. L.: Treatment of Pain in Carcinoma of the Cervix Uteri with Special Reference to Stricture of the Ureter, ibid., **20**: 30-35 (July) 1928.

4. Dumont: Accidents urémiques consécutifs à l'oblitération des uterus par une tumour cancéreuse Bull Soc. d'anat. et physiol. de Bordeaux **2**: 203-207 (June) 1881.

5. Rispal and Comberlan: Hémiplégie urémique dans un cas de compression des urétères par cancer utérin, Toulouse méd. **6**: 114-117 (May) 1905.

6. Herbiner: Cancer utérin avec anurie et mort par urémie, Bull. et mém. Soc. anat. de Paris **81**: 733-786 (Dec.) 1906.

7. Kummer, R.: Note sur un cas d'anurie consécutive à un cancer de l'utérus, J. d'urol. **13**: 372-379 (April) 1922.

8. Gotting, F.: Anurie nach uteruskarzinomrezidin, Zentralbl. f. gynäk. **47**: 321-322 (Feb.) 1923.

9. Holzbach, E.: Cause of Death in Cancer, Zentralbl. f. Gynäk. **47**: 1893 (Dec. 15) 1923.

10. Myers, W. A.: Obstructive Anuria, J. A. M. A. **35**: 10-13 (July 24) 1925.

11. Denslow, F. M., and Campbell, Watson: Bilateral Hydro-Ureter and Hydronephrosis Due to Compression of Both Ureters by Extension of Carcinoma of Uterus into Bladder-Horseshoe Kidney, J. A. M. A. **78**: 505-506 (Feb. 18) 1922.

12. Hunner, G. L.: Ureteral Stricture Bull. Johns Hopkins Hosp. **29**: 1 (Jan.) 1918.

acid, but as the lumen of the ureter slowly becomes smaller these simple measures will not suffice. Infection frequently occurs, and chills and fever result. Hunner [12] states that high fever may occur without infection when a stricture exists in only one ureter. As the condition progresses, nausea and vomiting with abdominal distention appear, and when the ureteral occlusion becomes complete a uremic state ensues and death is not far off. The average patient lives not more than from six to eight days after the appearance of anuria, but Myers [10] has reported a case in which the patient lived thirty days.

The exact mechanism of the stricture formation is not always the same. External pressure from a mass of carcinoma surrounding the ureter and appearing by direct extension in the parametrium is probably the

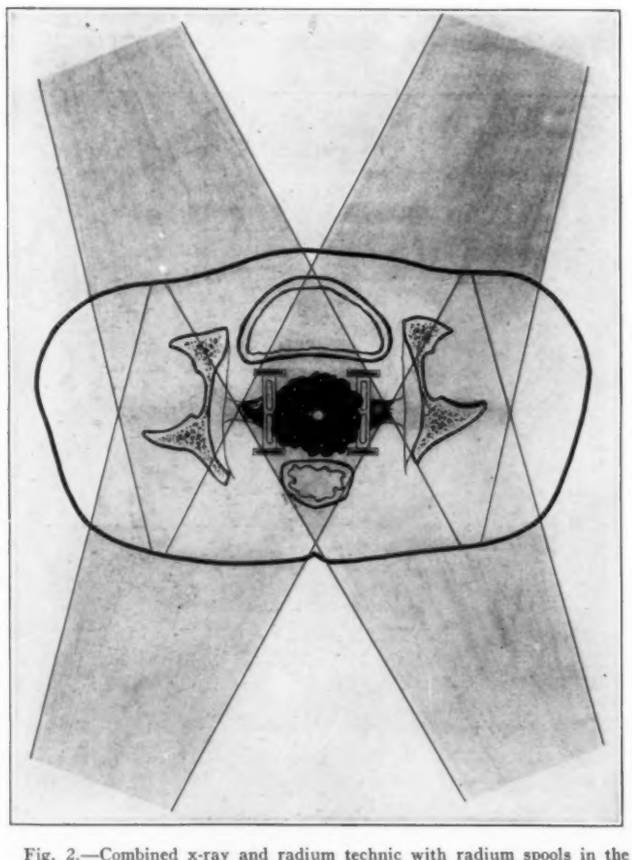

Fig. 2.—Combined x-ray and radium technic with radium spools in the vaginal vaults, radium needles in the periphery of the tumor, and a radium capsule in the cervical canal. The x-ray crossfire and the spools irradiate the ureteral areas.

most common form. This extension can be palpated by a finger in the rectum, and its detection is of the greatest importance since it can often be felt before ureteral injury has been produced. Carson [13] states that metastases into the lymphatics of the ureter itself may produce the same result. Extension into the bladder with proliferation, the formation of bullae and ulceration about the ureteral orifice, can also produce occlusion.

The demonstration of obstruction with its resulting hydro-ureter and hydronephrosis is, of course, dependent on cystoscopy and pyelography. Dr. Burnam has informed me that it was his custom many years ago when he first began seeing these cases to measure the residual urine that flowed through a ureteral catheter, thereby determining the presence or absence of hydronephrosis. Cantoni [14] recommended cystoscopy and catheterization as extremely valuable preliminary measures to treatment seven years ago. Herger and Schreiner [15] have recently demonstrated hydro-ureter or hydronephrosis in practically half of a series of advanced cases of cancer of the cervix by the use of pyelography.

The importance of this complication having been established, it becomes evident that any efficient plan of therapy must deal thoroughly with the lateral broad ligament areas. The most promising results should, of course, be obtained by irradiating these regions before ureteral involvement has occurred. The bomb devised by Bailey,[16] although it is rather difficult of manipulation, accomplishes the desired result but requires the use of large amounts of radium. The colpostat of Regaud, as recently described by Lenz,[17] is designed to irradiate the broad ligament areas through the vaginal vaults and utilizes much smaller quantities of radium. The aluminum spools designed by the Martins [18] perform the same function and have the added advantage of so protecting the bladder and rectum that heavy doses of deep x-rays may be given (fig. 2). The addition of these spools placed in the vaginal vaults to the old technic consisting of a long capsule in the cervical canal, peripheral needles containing small amounts of radium and a crossfire of the pelvis with x-rays has, I believe, reduced the number of patients that return complaining of pain.

After ureteral occlusion has occurred, the problem becomes a more difficult one. At times, definite improvement will follow the application of irradiation by the ordinary standard technic.

CASE 1.—A white woman, aged 54, suffering from cancer of the cervix, complained of severe aching pain low in the back referred to both hips and the left thigh of six months' duration. For six weeks she had received morphine for the pain. A pyelogram showed the shadow of the entire left ureter to measure one-half inch in width (fig. 3). Definite induration was felt by rectum extending from the cervix to the left pelvic wall. X-ray and radium therapy were given by means of capsules placed in and against the growth. In two months all the symptoms had disappeared and she remained symptom free for a year, at the end of which time she wrote from a distant city saying that the pain had recurred.

After lateral extension has occurred, the natural tendency is to expose the involved area surgically and to apply radium directly to the malignant tissue. Bumm [19] has attempted to do this through an incision made into the ischiorectal fossa. Daels and de Backer [20] advocate the passage of a tube entirely through the lateral pelvis in an anteroposterior direction, so that radium capsules may be passed into the tube and left at various levels long enough to produce regression of the growth. These methods seem radical but should not be so considered when there is so much at stake. Insertion of radon tubes into the involved tissue from the peritoneal

13. Carson, W. J.: Metastatic Carcinoma in the Ureter, Ann. Surg. **82**: 142 (July) 1925.

14. Cantoni, V.: Cistoscopiae cateterismo degli ureteri nella diagnostica e nella terapia del cancro uterino, Tumori **8**: 418-447 (March) 1922.

15. Herger, C. C., and Schreiner, B. F.: Strictured Ureters: Hydronephrosis and Pyonephrosis Occurring in Cancer of the Cervix Uteri, Surg. Gynec. Obst. **43**: 740-743 (Dec.) 1926.

16. Bailey, H.: The Use of Radium in Cancer of the Female Generative Organs, Radium Report of the Memorial Hospital, New York, 1923.

17. Lenz, M.: Radiotherapy of Cancer of the Cervix at the Radium Institute, Paris, France, Am. J. Roentgenol. **17**: 335-342 (March) 1927.

18. Martin, C. L., and Martin, J. M.: A Radium Spool for Treating Carcinoma of the Cervix, Am. J. Roentgenol. **13**: 174-176 (Feb.) 1925.

19. Bumm, E.: Ueber paravaginale Radiumbestrahlung, Arch. f. Gynäk. **117**: 221-223, 1922.

20. Daels, F., and de Backer, P.: Treatment of Cancer of the Uterine Cervix, Nederl. Tijdschr. V. Geneesk. **1**: 229-243 (Jan. 17) 1925.

cavity after abdominal section has been suggested by Burnam,[21] Levin,[22] Seeligmann [23] and Durham.[24]

All of these methods contain an element of danger in that they may produce exactly the condition that we are attempting to prevent; namely, stricture of the ureter. Martin and Rogers [25] have shown that 54.3 mg. hours of radium applied in the form of two small steel

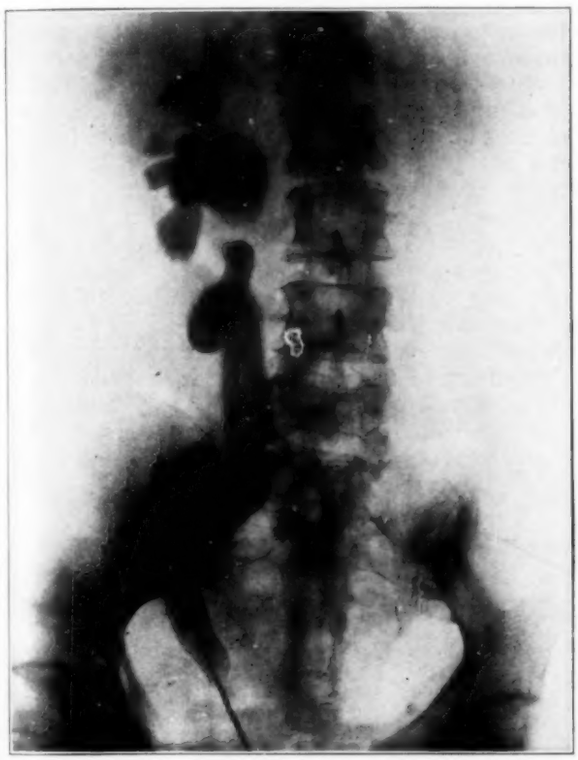

Fig. 3.—Hydro-ureter and hydronephrosis secondary to ureteral stricture in a case of cancer of the cervix. Pain in the hip and back on the affected side was relieved for one year by irradiation.

needles placed alongside the ureter of a dog will produce a partial stricture in forty-four days. Seventy-five milligram hours will produce a complete stricture, as shown in figure 4, in sixteen days. Unfiltered or partially filtered radium must therefore be used with the greatest care when placed near the ureter. That the same danger does not exist when reasonable amounts of well filtered radium are used in the cervix and vagina was brought out in another paper by Martin and Rogers.[3] Two and one-half erythema doses of well filtered radium were applied directly to the ureter of a dog without producing any appreciable harm. With most of the recognized technics the radiation reaching the ureter is not likely to exceed two and one-half erythema doses.

When carcinoma is efficiently irradiated, it shrinks and is replaced by fibrous tissue. It seems quite possible that such shrinkage and fibrosis of tissue adjacent to or partially surrounding a ureter might produce obstruction. Case 2 can be explained on this basis.

21. Burnam, C. F.: Results of Treatment of Carcinoma of the Cervix, Am. J. Roentgenol. **9**: 765-771 (Nov.) 1922.
22. Levin, I.: Intraperitoneal Insertion of Buried Capillary Glass Tubes of Radium Emanation in Carcinoma of the Cervix Uteri, Am. J. Roentgenol. **12**: 352-357 (Oct.) 1924.
23. Seeligmann, G.: Two Years' Experience with Combination Treatment of Surgery and Radium Rays in Cases of Carcinoma Uteri, Am. J. Obst. & Gynec. **9**: 66-72 (Jan.) 1925.
24. Durham, P. E.: Intraperitoneal Implantation of Cervical Carcinoma, M. J. & Rec. **121**: 597 (May 20) 1925.
25. Martin, C. L., and Rogers, F. T.: The Effect of Irradiation on the Ureter, Am. J. Roentgenol. **16**: 215-218 (Sept.) 1926.

Case 2.—A white woman, aged 64, had had a bloody vaginal discharge for five months. For three weeks there had been some aching pain in the right hip groin and thigh. Examination showed the upper vagina filled with shaggy masses of bleeding, friable malignant tissue which extended out into the vaginal walls and obscured the cervix. Induration could be felt by rectum extending from the cervix to both pelvic walls.

Into the crevices of the malignant tissue in the vagina and cervix, 6.25 mg. brass radium capsules were inserted so as to obtain a fairly even distribution of radiation, and a dose of 2,400 mg. hours was given. The pelvic mass was crossfired with deep x-rays through four portals of entry according to the plan shown in figure 2. The symptoms all subsided and the patient felt well for five months. At the end of that time she returned because of a severe aching pain in the left hip and left sacro-iliac region referred to the left thigh. Cystoscopy was done by Dr. Minnie Maffett and a small catheter was passed through a stricture low in the left ureter. A pyelogram revealed a moderate dilatation of the left ureter and kidney pelvis. The stricture was vigorously dilated with a Walther dilator. The patient was quite ill for three days and complained of increased pain, nausea and vomiting. There was some blood in the urine. Morphine, chloral hydrate and bromides were used for symptomatic relief and on the third day all the symptoms abated.

The pelvis was again crossfired with x-rays, and 900 mg. hours of radium was applied to a suspicious area in the vaginal vault. The patient left the hospital free of pain and has not had any further trouble for a period of one year and

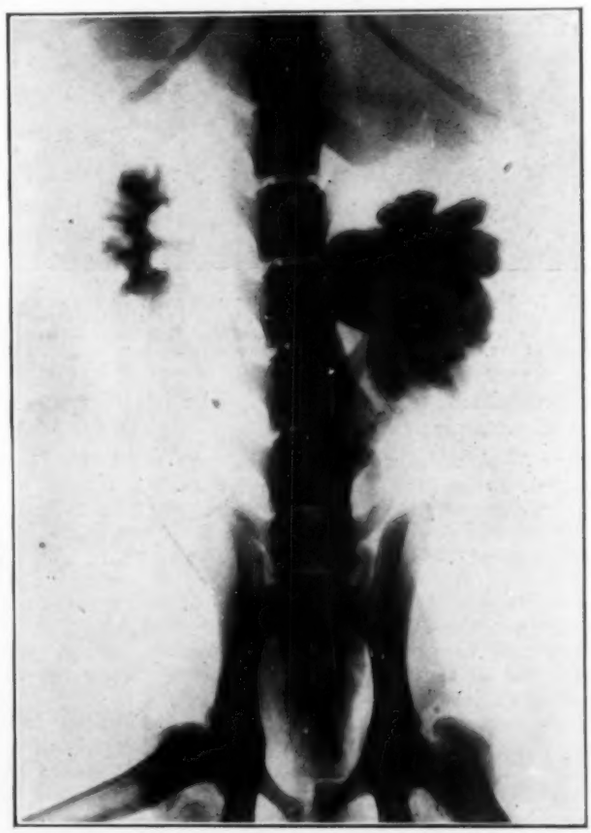

Fig. 4.—Hydronephrosis produced in a dog by applying 75 mg. hours in the form of radium needles directly to the midportion of the ureter.

nine months. At a recent examination, definite evidence of malignancy could not be made out. She had gained 15 pounds (7 Kg.) and was in excellent health.

It seems unlikely that this stricture, relieved by one dilation, could have been caused by growing malignant tissue. Pain has been relieved in a number of patients having definite malignant strictures by a vigorous dilation, but the relief rarely ever lasts for more than two

or three weeks and this procedure alone is therefore not a very satisfactory one. However, it is possible in some cases to irradiate the broad ligament areas so thoroughly that the progress of the tumor is controlled. This procedure may not open up the strictures or relieve the pain, but dilations done afterward may give relief for considerable periods of time and eliminate

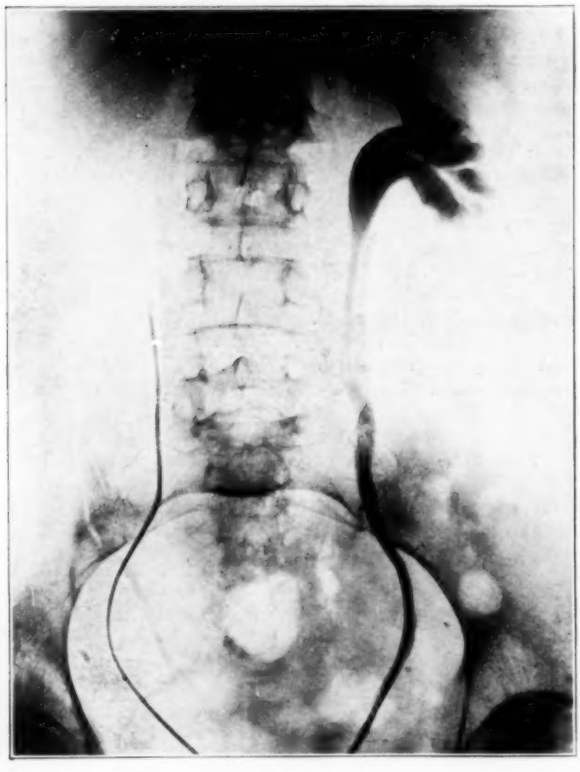

Fig. 5.—Hydronephrosis and hydro-ureter accompanying cancer of the cervix. Pain in the sacro-iliac region, the hip and the thigh was not relieved by successful irradiation of the tumor. Relief was obtained by dilation of the stricture with a wax bulb on a catheter.

the necessity of using narcotics. The following case is a good example:

CASE 3.—A white woman, aged 48, who had had a blood-tinged discharge for a year, was subjected to a subtotal hysterectomy, it being the surgeon's opinion that the trouble was in the uterus. Histologic study of the lower end of the specimen removed showed squamous cell carcinoma. For five months prior to the operation she had had an irregular elevation of temperature and had complained of aching pain in the left groin referred to the hip. Following the operation the pain became very severe and the temperature reached from 101 to 102 F. each day; at the end of two weeks she was referred for irradiation.

The patient was slender and anemic and was bleeding freely from a mass of friable malignant tissue that replaced the cervix. Pockets of pus within this tissue were opened and disinfected. Both broad ligaments were indurated, but this process was most marked on the left side.

Multiple small radium capsules were distributed evenly in the crevices of the tumor tissue and a dose of 2,400 mg. hours was administered. The radium spools were then placed in the vaginal vaults as shown in figure 2, a dose of 1,200 mg. hours being used. The pelvis was next crossfired with x-rays through four portals of entry according to the plan shown in figure 2.

At the end of two months, practically all of the visible tumor had disappeared and the patient's temperature was normal and she was able to be up; but she still complained bitterly of pain in the left hip, sacro-iliac region and thigh. Cystoscopy was done by Dr. Edward White and a pyelogram revealed a hydronephrosis and hydro-ureter on the left side (fig. 5). Dilations with a wax bulb were done at intervals and the pain slowly disappeared. The patient has been in relatively good health for one year and eight months and is not taking narcotics for pain. She states that she still has discomfort in the region of the kidney at times and she visits the urologist occasionally for a dilation. There is not at present any demonstrable evidence of malignancy in the pelvis.

When the disease is so far advanced that irradiation cannot be efficiently applied or is incapable of producing improvement, the relief of pain is even more difficult. Holzbach [9] advocates the transplantation of the affected ureter into the vertex of the bladder, thereby leaving the broad ligament area clear for more intensive irradiation. If this were a simple procedure, it would certainly serve a most useful purpose in relieving pain and prolonging life whether the subsequent irradiation proved successful or not. However, one hesitates to advise such an operation for patients who are already in very poor condition. To be successful, it should be done when pain first appears.

Holz [26] suggests the use of inlying ureteral catheters as a substitute for the operation. At first thought this seems an excellent idea, but in my experience it has proved rather unsatisfactory. The catheters invariably become occluded with mucus and débris and after a week or two can hardly be kept open, even with constant

Fig. 6.—Double hydronephrosis from cancer of the cervix causing pain in both hips and thighs and elevation of temperature. Pain was not relieved by irradiation. Definite improvement followed double nephrostomy.

attention. However, the following case illustrates the fact that such catheter drainage will relieve the pain:

CASE 4.—A white woman, aged 46, with a large cancerous crater at the site of the cervix which was firmly fixed by broad ligament extension, was completely relieved of the hemorrhage and discharge by irradiation. The crater con-

26. Holz, W.: Danger of Uremia with Inoperable Uterine Cancer: Comment on Holzbach's Article, Zentralbl. f. Gynäk. **48**: 705 (March) 1924.

tracted so that malignant tissue could not be seen. Two months later she returned because of severe pain in the right groin, hip and thigh. A pyelogram made following a cystoscopy done by Dr. Raworth Williams revealed a stricture about 3 inches (8 cm.) long in the right ureter situated low in the right side of the pelvis with a marked dilatation of the upper ureter. A vigorous dilation with a Walther dilator gave complete relief of the pain for one week, after which it returned with nausea and vomiting and pain in the costovertebral angle. A large catheter was then placed in the right ureter by Dr. Minnie Maffett and left in place. At the end of twenty-four hours the patient was much worse, but this condition was explained by a complete failure of drainage from the catheter. A syringe was used to establish drainage and about a half pint of urine was withdrawn. The nausea and pain disappeared almost immediately afterward. The catheter was left in place for ten days and produced marked relief but it became blocked two or three times during each twenty-four hours and was finally removed because it could not be kept open any longer. There was an almost complete absence of symptoms for about a week after its removal but they then recurred as bad as ever.

In cases in which it seems impossible to maintain ureteral drainage from below, ureterostomy or nephrostomy offers itself as a possible palliative measure. Kummer [7] succeeded in abolishing a uremia already established and gave the patient relative comfort for eight months by performing a nephrostomy first on one side and then on the other. A urinary infection developed after a time and death was finally due to uremia. Patients with a double nephrostomy require careful nursing and infection is likely to occur. The following case illustrates some of the difficulties:

CASE 5.—A white woman, aged 50, had a carcinomatous mass at the site of the cervix about 2 inches (5 cm.) in diameter. It was fixed in the pelvis by bands of broad ligament extension on both sides. A crater in the center of the mass measured about three-fourths inch (2 cm.) in diameter. Irradiation was given and she improved steadily for five months, when she began to complain of pain in both hips and both thighs referred at times to both costovertebral angles. She had recurrent febrile attacks, during which she was nauseated.

Examination revealed little evidence of carcinoma in the vagina. However, dense bands of induration were felt by rectum extending from the cervix to both pelvic walls. Pyelograms made following a cystoscopy done by Dr. H. L. Cecil revealed hydro-ureters and hydronephrosis on both sides (fig. 6). At that time the temperature ranged from 102 to 103 each day. Indwelling catheters were left in place but were removed at the end of forty-eight hours because of blockage. A week later a nephrostomy was done on the left side. Although there was free drainage through the tube, the temperature elevation continued for eighteen days, at the end of which time it rarely went above 100. An unsuccessful attempt was then made to place a drainage tube in the pelvis of the right kidney. Although this tube did not drain, the temperature was subnormal for five days, after which it again reached 101 and 102 each day. Nine days after the operation on the right side, the wound was again opened and the tube was placed in the pelvis of the kidney. Drainage was obtained this time. The temperature continued to rise to 102 each day for five days. However, during the next four days of observation before the patient left the hospital, the temperature rarely went above 99. During these procedures she was very weak and was often drowsy and sometimes semicomatose. At times she had attacks of pain requiring opiates for relief. When she left the hospital she was more comfortable but very weak. The drainage tubes bothered her a great deal. There was considerable leakage about the tubes, which made it necessary to keep large continually moist dressings on the back. These dressings were uncomfortable. However, a letter received three months after her discharge stated that she felt much better and was able to go to the table for her meals. She was gaining weight and strength but still had occasional febrile attacks accompanied by nausea.

After having seen a patient with a ureter severed and brought out through the anterior abdominal wall, I believe that this procedure is superior to nephrostomy and I am anxious to try it in malignant disease of the cervix. Radium needles or implants might be placed in the broad ligaments at the time of the operation without endangering the function of the transplanted ureter. Be the method of treatment what it may, attention to the ureters is most important in the successful handling of cancer of the cervix in the stage which is usually observed at the first clinical examination.

SUMMARY

1. Approximately 80 per cent of all patients with cancer of the cervix treated by all methods eventually succumb to the disease.

2. In this group of cases, strictures of the ureters producing pain and eventually uremia and death are the most important complications.

3. Irradiation should be directed vigorously toward the broad ligament regions in an effort to prevent ureteral involvement.

4. After the complication appears, dilation through a cystoscope, indwelling catheters, ureteral transplants, nephrostomy and ureterostomy may relieve pain and prolong life.

Medical Arts Building.

ABSTRACT OF DISCUSSION

DR. HENRY SCHMITZ, Chicago: The importance of these complications is shown by the fact that about 15 per cent of such patients succumb from some complication of the urinary tract caused by direct extension of the cancer, obstruction from without and within, and infection. It is of the utmost importance to make a detailed examination of the urinary tract. If urinary tract complications are seen at the time, they necessarily influence the indications for treatment unless one is reasonably certain that the treatment may also remove them. If urinary tract complications arise after operation or radiation therapy, they may result either from the effect of the treatment or from an incomplete removal or modification of the tumor. If stricture of the ureter with obstruction ensues, then the patient complains of constant severe pain in the deep muscles of the hip radiating upward and downward. If obstruction is bilateral, then kidney function is correspondingly involved, and the nitrogen retention present finally causes uremia and death. If an active carcinoma is present, treatment should be palliative and consist of dilation of the ureter. It is questionable whether surgical correction should be undertaken. A uremic death is probably shorter and easier than death from progressive cancer. If one is reasonably certain of an arrest, the operation of choice is complete removal of the primary tumors with ureteral transplantation into the bladder, or the Mayo modification of the Coffey operation.

DR. G. E. PFAHLER, Philadelphia: Dr. Martin deserves a great deal of credit for emphasizing the importance of this subject. It is not a simple matter to overcome. I have demonstrated the obstruction just as he has. I believe that we must depend on the radium primarily to prevent this condition, and if possible to overcome it. Other measures are only temporizers.

DR. CHARLES L. MARTIN, Dallas, Texas: What Dr. Pfahler says is quite true. It is difficult and often impossible to do anything in many of these cases of stricture. In some of them catheterization cannot be done at all and only the more radical procedures offer even a chance of relief. Dr. Schmitz suggested that it might be more humane to allow these sufferers to die without attempting to give them relief, and since many of them do die in spite of all treatment, he may be right. However, the death from uremia is a very slow painful affair and I much prefer to use all the mechanical and physical methods at our disposal before giving up all hope and resorting to opiates. The success attained in some of the cases cited in this paper seems to me to justify the attempt.

FRACTURES OF BOTH BONES OF THE FOREARM IN THE ADULT*

C. B. FRANCISCO, M.D.
KANSAS CITY, MO.

The management of fractures is one of the oldest problems that the medical profession has had to consider. Down through the ages a fixed principle has been adhered to in the treatment of patients with fractures. That principle is immobilization of the parts

Fig. 1.—Wire loop extension traction with cast.

until nature has united the fragments. This will always be the corner stone of the treatment of all fractures, but there has been a tendency recently to underrate nature's part.

At the present time there is perhaps more interest in the treatment of fractures than there has ever been before. This is due to conditions that exist today. Changes in industrial laws have been a great factor in promoting this interest, and these laws have resulted in greater efforts being made to reduce the time of the healing of fractures, thereby lessening the disability. Marked improvement has been made in the management of patients as a result of this stimulus, and there is still room for more improvement; but there is a limit as to what can be done. I think it is time that a warning should be sounded so that the tendency toward reduction of the time for disability will be balanced by proper consideration of nature's part in the healing of fractures, and therefore a discussion of forearm fractures was chosen to illustrate the point.

The seriousness of fractures of both bones of the forearm in the adult has not in my opinion been sufficiently emphasized. The analyzed results in the literature usually include Colles' fractures and fractures in children. The percentage of good results is therefore high and misleading when applied to fractures of the shaft of the bones in adults. Scudder [1] opens a chapter in his "Treatment of Fractures" by saying that "fractures of the forearm probably offer more problems in mechanics than any other fracture in the body, not excepting the femur."

A number of cases of nonunion and delayed union of forearm shaft fractures have been observed at the University of Kansas Hospital in the past eight years and some of them will be detailed later showing the end-results and the management, which may have had some bearing on the results obtained.

Many causes have been suggested for nonunion, but in the final analysis perhaps there are only two that will stand the test of time, these being interposition of soft parts and mismanagement. The difficulties of managing fractures of both bones of the forearm are physical ones, because of the type of bones that have to be dealt with. The bones are small and firm with curving contours for the attachment of strong muscles; the small amount of cancellous structure present in the shaft necessitates a longer period of time for consolidation of callus. I have repeatedly observed that at the end of six weeks there was no evidence of union clinically and very little by x-ray, and further observation at eight and nine weeks has been very discouraging. At this stage there is great temptation to operate in order to shorten the period of disability, especially if the alinement is not perfect. However, an intervention at this time is probably just the wrong thing. The incision of the tissues stimulates connective tissue formation, which interferes with the growth of callus by preventing the bone cells from reaching the outer surface of the fractured ends of the bone. Nonunion is very likely to follow either open operation or manipulative intervention when performed at about the sixth or eighth week. At least this has been usually true in the cases of nonunion that I have observed.

It is not always possible to secure accurate apposition or good alinement when both bones are completely fractured. There is also a tendency for the deformity to increase, unless extension is used. Since the use of fixed extension has been adopted in the treatment of every case of fracture of the forearm bones, whether

Fig. 2 (case 1).—Union of radius.

reduced by the open or the closed method, no difficulty in union has been encountered. There has been delayed union but at no time has the ultimate result been in doubt. When it has been possible to secure contact

* Read before the Section on Orthopedic Surgery at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

1. Scudder: Treatment of Fractures, ed. 10, Philadelphia, W. B. Saunders Company, Chapter XVI.

end-to-end apposition, open reduction has not been done. Open reduction early is definitely indicated when satisfactory reduction cannot be otherwise attained, but I feel that extension with the fixation is indicated just as definitely after open reduction as it is following

Fig. 3 (case 2).—Nonunion of both bones; ulna, of nine years' duration; radius, of fifteen months' duration.

closed reduction, the reason being that the normal contraction of the tendons of the forearm, of which there are a great number, produces a sufficient pressure on the ends of the bones to cause an interference in the formation of callus.

A simple method of securing extension is to apply adhesive strips below the fracture site, and then incorporate a wire loop in the plaster cast which extends beyond the fingers, and attach the adhesive strips to it by means of a rubber loop or tie them directly to the wire and tighten them from time to time (fig. 1).

The report of the following six cases shows that it is very difficult and sometimes impossible to secure even a moderate amount of function in this type of injury. In the two patients with positive Wassermann reactions, it was not considered that syphilis was a factor in the nonunion. One patient did not have any difficulty or delay in the union of the tibia, but as yet, three months after operation on the forearm, there is no sign of union. The other patient, however, did not give a history of other fractures. All these patients had suffered considerable meddling during the first six weeks or delay in securing apposition. The results in these cases are bad. It is felt that perhaps extension primarily would have improved the results both as to union and as to time of disability.

REPORT OF CASES

CASE 1.—L. C. H., a man, aged 33, who came to the clinic, April 10, 1926, stated that on Dec. 1, 1925, when he was placing a pulley on a gasoline engine, his left forearm was caught and both bones were fractured in the middle third. Reduction was impossible. Both bones were cut down on and then placed in apposition, but they did not remain in proper alinement. December 8, he was operated on again, both bones being wired in good apposition, and anterior and posterior splints applied. The patient came into the clinic wearing these splints. His general condition was good and there was very little deformity of the forearm. X-ray examination showed good alinement but there was definite nonunion. On the date of admission, blood examination revealed: calcium content, 10.2; phosphates, 2; Wassermann reaction, negative. A traction cast was applied and he was advised to take large doses of calcium salts and cod liver oil, three times a day. He returned, June 5 (two months later). The roentgenogram (fig. 2) showed beginning union of the radius but very little callus around the ulna. The blood examination showed: calcium content, 11.6; phosphates, 2.1. At present, June, 1928, he has firm union of the radius but no union of the ulna, although there is a fair amount of function.

CASE 2.—H. R. M., a man, aged 30, who came under my care, Sept. 8, 1926, stated that on Aug. 1, 1917, while he was in the army, a horse kicked him, fracturing both bones of the right forearm in the lower third; he was treated by ordinary splinting, but the bones did not unite. Feb. 12, 1918, he was operated on with a resulting union of the radius but nonunion of the ulna. In June, 1925, he refractured the radius, since which time he had been wearing a splint; and at the time I examined him he had nonunion of both bones. X-ray examination (fig. 3) disclosed a definite nonunion, but the forearm supported itself, indicating some fibrous union. Examination of the blood for the calcium or phosphorus content was not made but the patient had a four plus Wassermann reaction. There is no doubt that the radius was fractured at the site of the original fracture, which occurred in 1917. He refused operative treatment.

CASE 3.—T. W., a woman, aged 38, stated that, Dec. 8, 1925, she fell on the sidewalk and fractured both bones of the forearm about 4½ inches below the elbow. Three efforts were made at reduction, and the physician in attendance thought at one time that union was occurring. Jan. 24, 1926, she came under my observation. At this time the fluoroscope disclosed sufficient union between the ends of the bones to hold them together. The arm was placed in a supine position and a

Fig. 4 (case 3).—Nonunion of both bones.

traction cast was applied. This was worn until March 2, when it was found that the bones were not united. Blood examination showed: calcium content, 10.1; phosphates, 2; Wassermann reaction, four plus. A new cast was applied without traction,

and cod liver oil, calcium salts and antisyphilitic treatment were given. November 10, blood examination showed: calcium content, 10.2; phosphates, 2.8; Wassermann reaction, four plus. Treatment was continued until May, 1927, when a large fibroid of the uterus was discovered, which was removed. In

Fig. 5 (case 4).—Fracture of graft on radius fifteen months after it was applied. Ulna graft still holding.

March, 1928, x-ray examination (fig. 4) showed nonunion. Operation was done and massive grafts from the tibia were applied to both bones. Two weeks later the patient fell out of a wheel chair and fractured the tibia at the site where the grafts were removed. At the present time the tibia has firmly united but there is no evidence of union in the bones of the forearm. Repeated manipulation during the first six weeks may have been a factor in the nonunion.

CASE 4.—J. M., a man, aged 38, who came under my observation in the fall of 1919, stated that in June, 1917, he was thrown from a wagon, fracturing both bones of the forearm in the upper middle third and the humerus just above the condyles. An ordinary splint was applied, and the fractured humerus united promptly but the radius and ulna did not unite. In April, 1918, and in June, 1918, open operations were performed, both of which were followed by nonunion. In April, 1919, the patient was operated on by Dr. Henderson at Rochester, where massive bone grafts were applied. Union was secured at this time, and at the time of my original examination there was firm bony union with good alinement but considerable ischemia of the muscles. In the spring of 1920 the patient refractured the radius, which has remained ununited as it was thought unwise to operate on his arm again because he had such a large amount of scar tissue from previous operations that the function of his hand was greatly impaired. His present condition is shown in figure 5.

CASE 5.—W. B., a man, aged 40, who came under my observation in March, 1924, stated that in February, 1923, while working as a mechanic, he was under a car when the block slipped out, letting the car down on his right forearm and fracturing both bones in the middle third. Reduction was attempted, but failed. In March, 1923, he was operated on and the muscles were found between the fragments of the bones. The bones were placed in apposition and a bone peg was used through the radius. Union was not obtained. In August, 1923, a sliding graft was inserted but union did not result. In March, 1924, I applied a massive bone graft on both radius and ulna. Some infection followed from this operation which did not subside until after the removal of the grafts, eight weeks later. At this time it seemed that the patient had a firm union, but two months later there was definite nonunion. He was operated on again in September, 1925, and again in September, 1926, without union. In November, 1927, because of persistent pain and inability to use the hand, the forearm was amputated through the old fracture site. The condition of his arm at that time is shown in figure 6. Repeated blood examinations were normal as to calcium and phosphorus content, and the Wassermann reaction in both blood and spinal fluid was negative. His general condition has always been good.

CASE 6.—G. B., a woman, aged 36, seen in January, 1921, stated that in December, 1920, she fell down some steps and fractured the right forearm about 2½ inches above the wrist. It was impossible to reduce this fracture. Five days later, an anesthetic was administered and a cast was applied, but there was poor apposition. In January, 1921, I did an open operation and placed the bones in perfect apposition, applying an ordinary circular cast. Union did not occur. The splint was worn about six months. The patient was given massage, vibration and stimulation. Ten months after operation there was no union of either bone. The patient was then advised to leave off the splints and to use the arm as much as possible. The Wassermann reaction at this time was negative and her general condition was continuously good. An x-ray examination made in October, 1922, about twenty months following the operation, showed fairly firm union of the radius but definite nonunion of the ulna. This condition persists at the present time, June, 1928. The patient has very good use of her arm, does all her housework, and does not complain.

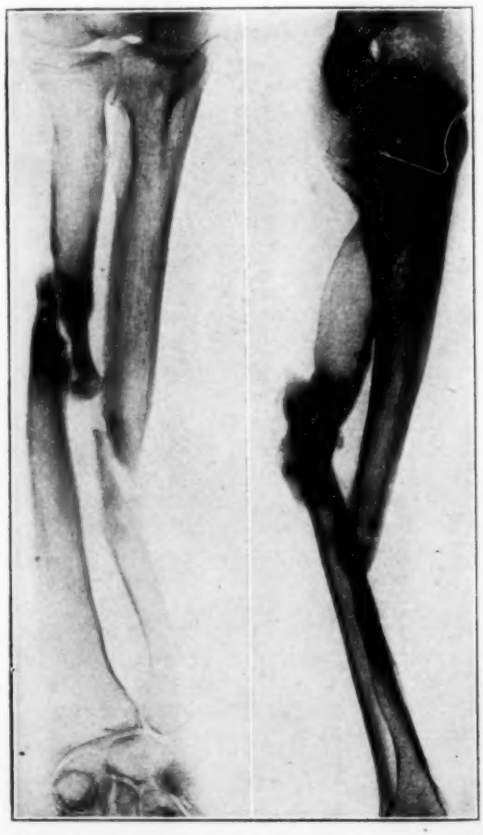

Fig. 6 (case 5).—Condition of bones just previous to amputation, five years after the original fracture.

During the past five years twenty-five cases of fractures of both bones have been treated by combined traction and fixation. In all of these cases firm union and good functional results have been secured. The average period of disability has been about four months

and only in the cases of compound fracture was disability claimed.

Case 7 is reported to illustrate the traction method and also the fact that a long period of time is necessary in some cases to secure firm union. It is felt that any intervention in this case might have resulted in nonunion. The time of disability has been considerable,

Fig. 7 (case 7).—Fracture reduced; traction cast applied.

about six months, but the result is much cheaper from the compensation angle as no permanent disability is claimed.

CASE 7.—B. D., a man, aged 28, was injured, Dec. 20, 1927, when an automobile turned over on him, fracturing each bone of the left forearm in three places. Six hours later he was given an anesthetic, and under the fluoroscope fragments were lined up and a traction cast was applied; roentgenograms were taken (fig. 7). Feb. 4, 1928, six weeks after the injury, the cast was changed. At this time there was no apparent union. March 6, the plaster was changed again, and the extension was left off. Clinically there was evidence of some union, but little if any callus was shown by the x-rays. The splints were worn until about the middle of April, when they were left off entirely. The patient now (June, 1928) has firm union (fig. 8) and normal function of the hand and the arm, and is ready for duty.

CONCLUSIONS

1. It requires about three months for union to occur in fractures of both bones of the forearm in adults.
2. Apposition should be secured early either by open or by closed reduction, and fixation with traction should be continued until there is clinical evidence of union.
3. Attempts to hasten union in fractures often lead to disastrous results.

Argyle Building.

ABSTRACT OF DISCUSSION

DR. A. E. FLAGSTAD, St. Paul: I believe that the number of malunited and ununited fractures that are the result of faulty reduction and faulty fixation is decreasing. In the treatment of fractures of both bones of the forearm, it is essential to bear in mind that we have not the same liberty of anatomic distortion that we have in the treatment of fractures of other long bones. There is a tendency in fractures of both bones of the forearm for the interosseous space to be narrowed. This space is a definite entity and should be preserved. The convexity of the radius is important, and a flattening of this convexity may result in limitation of rotation. It is well to remember that the venous supply is rather superficial and is quite easily interfered with. Dr. Francisco's results illustrate what can be done by proper operative procedure and fixation. When we have no evidence of union or marked malposition, we should resort to open operation. However, it represents a difficult surgical procedure and requires special skill.

DR. J. E. M. THOMSON, Lincoln, Neb.: Dr. Francisco has shown that after all the two most important factors for union of fractured bones are, first, adequate extension and immobilization with fixed traction, and second, early anatomic apposition of the fragments. In every one of those fractures in which apposition was attained early, healing resulted without complication. Those in which late operations were done did not heal so rapidly. Most of these fractures are transverse, and very often, by means of fixed extension, we can get full length, but we are not always able to get adequate apposition of the fragments. The operative factor in those patients who had to be operated on might have had an influence on the nonunion or delayed union. There is no doubt, I think, that that could be a factor in delaying the union. Therefore, we practice only the most conservative operative procedures. It has been our custom, after the cast is applied and full extension is attained, particular attention being given to getting full length to the arm, to cut a generous window in the cast, if apposition has not been attained, anterior and posterior to the fragment out of line. At times there is only one bone out of place, and if the cast is taken off for further manipulation, one might lose the position of the other bone. Therefore, a lever or pin right through the skin, with the arm under the fluoroscope, can be placed between the ends of the bones; the bones can then be levered absolutely into position under one's vision and checked with the fluoroscope. The pin in most instances can be withdrawn with perfect safety but, if it has to be left in place, a little more plaster of paris can be added to the cast to hold the pin and fix this lever in the cast. A week or ten days later, it can be removed with perfect safety, eliminating all possibility of danger due to foreign material. Leaving a foreign material buried with fractured bones may influence the healing; therefore, we seldom leave these instruments between the fragments more than the short time mentioned. By this procedure, in fresh fractures of the forearm, we have practically eliminated open operations in this region. There are instances in which

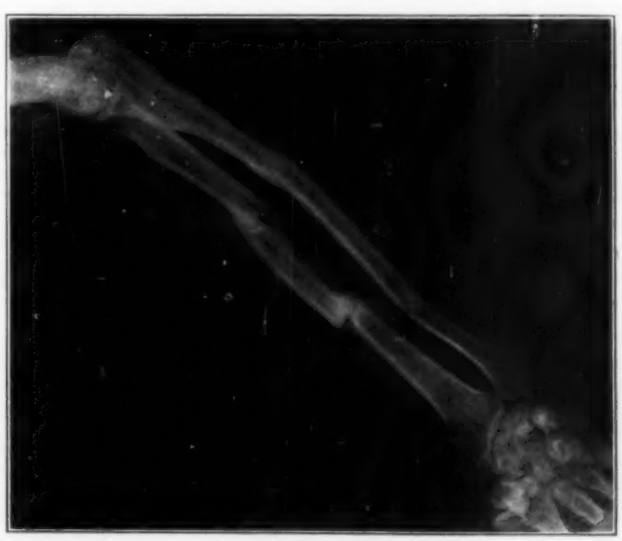

Fig. 8 (case 7).—Firm union about six months after fracture.

soft tissues are interposed between the fragments, and through the same window in the cast very carefully draped, operative procedure may be carried out, thereby causing the least amount of trauma to the soft tissues and the least amount of trauma to the bones by the simplest manipulative procedure.

DR. H. R. ALLEN, Indianapolis: Again we hear that traction and extension are indispensable in treating fractures. These items may apply to the reduction of fractures but no one ever ventures so far into the field of applied mechanics as to men-

tion the use of fixation energy for the prolonged fixation purpose of maintaining reduction. Some years ago I read a paper pertaining to a very simple method of securing end-to-end apposition, while also securing parallelism of radius and ulna, by the use of flat pointed drill points with low melting alloy handles. The bones and soft parts are transfixed with the drill pins, and their handles are brought into contact and fused together by a soldering iron heated to below the boiling point of water. This method provides outside control of inside conditions, and enables one to get excellent results in badly comminuted fractures in which other methods fail; consequently it may be reasonable to suppose that it has some merit in milder cases.

Clinical Notes, Suggestions and New Instruments

FRAMES FOR TAKING ROENTGENOGRAMS OF INFANTS *

HAROLD ABRAMSON, M.D., NEW YORK

Many difficulties are encountered in taking roentgenograms of infants. Considerable time and effort are wasted in endeavoring to keep the infants quiet; their constant twisting and squirming result in blurring and distortion and films which are confusing or of no diagnostic value. In addition, one or more attendants are required to hold the infants.

Fig. 1.—Frame for taking roentgenograms of the wrists. To afford sharper contrast, the forearm and wrist straps have been blackened.

In order to obviate these difficulties, frames have been constructed of ordinary pine wood and utilized to restrain the infants while roentgenograms are being taken of their wrists and chests. The frame used for wrist plates is designed in the form of a chair, 10 inches wide and 14 inches deep, with a hinged rest 10 inches high (fig. 1). At this height, when in position, the arms and forearms of the infants extend horizontally forward from the shoulders. The forearms and wrists are immobilized by means of two wide straps of unbleached muslin, arranged in loops and drawn through a base of similar material, beneath which the loaded plate holder is introduced. These straps are adjusted as tight as necessary by means of leather straps passing through springed buckles attached to the side of the frame. In this manner plates are obtained which show clearly the epiphyses, carpal centers and small bones of the hands. Obscuring shadows of the gloved hands of the attendants who formerly held the children are eliminated.

Roentgenograms of the chest may be made with the aid of the device shown in figure 2. This frame is composed of a base board 3 feet long and 10 inches wide, raised on legs 3 inches high. At one end a slot, 6 inches wide and 12 inches deep, permits the head of the infant to drop downward and forward, thereby preventing movement from side to side. The infant is held firmly in position by means of two ordinary leather book straps, one passing over the buttocks and the other through the axillae and high up around the back. By this means the scapulae are drawn up well out of the way. Direct postero-anterior views of the chest are obtained without blurring or oblique distortion. The loaded cassette is placed on the base board directly beneath the infant's chest.

Fig. 2.—Frame for taking chest roentgenograms of infants.

Both of these frames do away with the necessity of having assistants hold the infants. The time required to take roentgenograms is reduced considerably and the plates obtained are technically satisfactory.

203 West Ninetieth Street.

* From the Home for Hebrew Infants, service of Dr. Alfred F. Hess.

FOREIGN BODY IN LACRIMAL SAC FOR SEVENTEEN YEARS *

FRANK H. RODIN, M.D., SAN FRANCISCO

I. J., a woman, aged 37, seen, March 16, 1928, had had a right acute dacryocystitis in 1904, at which time the lacrimal sac had been incised. Seven years later she had a "white growth in her throat." This was removed, and the attending physician, having decided that the growth was caused by her old eye condition, tried to put a metal drain in the lacrimal sac but was unsuccessful. Then he placed a solid silver stilet, apparently first making an opening into the nasal cavity through

Fig. 1.—Appearance of the right eye, showing argyrosis of the lower half of the eyeball.

* From the Division of Ophthalmology, Stanford University School of Medicine.

the lower punctum and the region of the lacrimal sac. The stilet had been in the nose ever since.

In the last few years the patient had noticed that the coloration of the lower part of the right eye has been changing to black and that the lower eyelid had been turning out. The patient said that she wanted to pull out the stilet but had never received the necessary advice to do so from a physician.

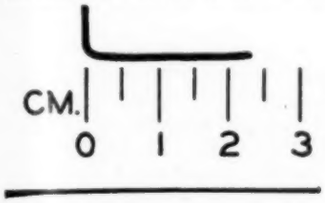

Fig. 2.—The silver stilet found in the lacrimal sac.

Examination of the right eye revealed that the lower canaliculus had been split. On pulling the lower eyelid at the inner canthus I saw a small silver metal lying in the split canaliculus. The bulbar conjunctiva of the lower half of the eyeball was dirty gray (argyrosis). There was a moderate ectropion of the inner half of the lower eyelid (fig. 1). The backgrounds were normal on examination.

I removed the stilet by grasping the presenting part with small forceps. It came out without difficulty.

The stilet (fig. 2) was 1.25 mm. in diameter and weighed 0.195 mg. (3.5 grains). The horizontal limb was still silver colored and was 7 mm. long, while the vertical part was tarnished and blackish and was 24 mm. long.

SUMMARY

In a case in which a silver stilet had been present in the lacrimal sac for seventeen years argyrosis of the lower half of the eyeball developed, being noticeable for a few years preceding examination.

No argyrosis was present in the backgrounds.

The stilet was removed.

490 Post Street.

HEREDITARY DYSTROPHY OF THE NAILS

HAROLD B. THOMPSON, M.D., SEATTLE

A recent article by Jacobsen[1] gives a fairly complete survey of the literature relative to cases of hereditary dystrophy of the nails, either alone or combined with alopecia. As these cases appear to be very rare and are interesting as examples of the mendelian transmission of characteristics, I will report a typical case, together with the family tree (fig. 1) covering four generations. The patient was referred to me, June 20, 1927, by Drs. Bartlett and Ruggles of San Francisco.

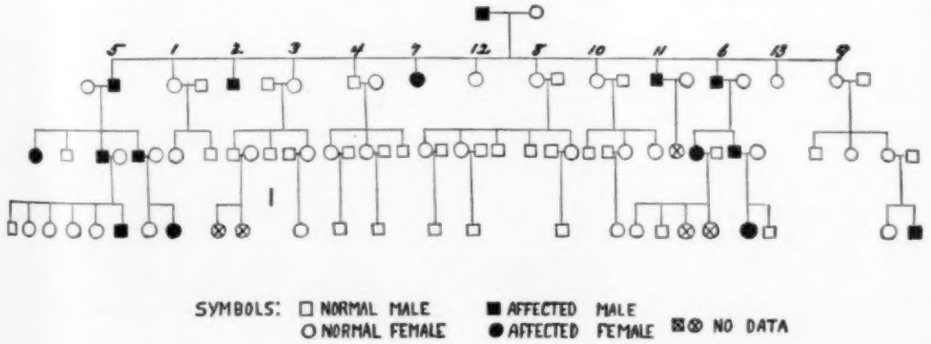

Fig. 1.—Occurrence of hereditary dystrophy of the nails through four generations.

B. L., a girl, aged 5 years, appeared normal in every way except for the nails both of the fingers and of the toes (fig. 2). She was in the fourth generation, being a direct offspring through child 5 of the original union.

The base of the nails appeared nearly normal, but they increased in thickness toward the distal ends and were very brittle and dry. They appeared to grow in thickness at the expense of length. Occasionally one or more nails became infected and gradually loosened and came off in one piece, without much soreness. The new nail gradually repeated this process.

Figure 1 shows that, of thirteen children born to the original pair,[1] five were affected—four males and one female. In the next generation five were affected—four males and one female—out of twenty-six offspring. In the last generation there were four affected—two males and two females—out of twenty-five offspring. This makes a total of sixteen affected out of sixty-five in the four generations, eleven being males and five females.

Fig. 2.—Appearance of finger and toe nails in a child of the fourth generation.

In all cases the dystrophy was inherited directly from an affected parent except in one instance, that of the ninth child of the first union, in whom the anomaly cropped out in the fourth generation. This child, therefore, had normal unaffected parents and grandparents.

The ratio of affected progeny to the total number appears to diminish gradually in each generation, as does also the severity of the condition.

At the suggestion of the physicians who referred the patients to me, x-ray treatments were instituted, divided doses of unfiltered radiation being used up to a point of beginning erythema.

Following this treatment a definite line appeared to develop from the base, gradually growing outward with the nail. The portion that was behind the line appeared much thinner and more nearly normal.

The patient spent the following year in Alaska and the nails gradually returned to approximately the previous condition, although apparently some benefit still remained.

Immediately following the first x-ray series one year ago, several of the nails became infected and dropped off, an occurrence which caused me some alarm but which did not bother the mother, who had witnessed similar trouble before. Just now another x-ray series has been completed and some beneficial results are already apparent. As the patient expects to return to Alaska for the winter, I may try thyroid therapy as suggested by Dr. Jacobsen.

The condition shown in figure 2 is a real affliction, especially to a female child. While I realize the probable futility of any treatment and have fully explained this to the parents, it seems that anything is worth trying as long as we go slowly and do not risk overdosage.

Cobb Building.

1. Jacobsen, A. W.: Hereditary Dystrophy of the Hair and Nails, J. A. M. A. **90**: 686 (March 3) 1928.

HODGKIN'S DISEASE THIRTEEN YEARS AFTER TREATMENT WITH ROENTGEN RAY AND RADIUM

G. ALLEN ROBINSON, M.D., NEW YORK

Samuel S., aged 23, noticed an enlargement of the lymph nodes in the left side of the neck during the latter part of 1915. He consulted Dr. C. G. Jennings of Detroit, who removed the largest node, and the diagnosis of Hodgkin's disease was made. Six roentgen-ray treatments of moderate intensity were given and the nodes disappeared. The patient felt entirely well and entered the United States Army in August, 1917, serving overseas with the Rainbow Division. He was wounded and gassed in action. In March, 1919, while he was stationed in Camp Dix, there was a recurrence of the lymph nodes in the left side of the neck together with the occurrence of axillary nodes and involvement of the left anterior chest wall. The patient received two radium treatments in March and April, 1919, by the late Dr. Stuart George Willis, who also treated him at the New York Postgraduate Hospital after his discharge from the army in August, 1919. Further radium treatment was given in November, 1920; one radium treatment was given in 1921, two were given in 1922, and one was given in 1923. After June 1, 1923, the patient did not report for further radium therapy until December, 1926. He had felt well except for a few months previously. On examination he appeared rather anemic, with evident loss of weight. He complained of severe aching pains at times in the lower part of the back. There were several large lymph nodes in the left side of the neck and a large mass 10 by 8 by 6 cm. below the clavicle, with large masses in each axilla. The spleen was not enlarged and the groin was normal. The red blood count in December, 1926, was 3,512,000, with a hemoglobin of 70 per cent; the leukocyte count was 15,700, with 90 per cent polymorphonuclear leukocytes and 10 per cent lymphocytes. The glands in the neck, anterior chest wall, and axilla disappeared after three radium treatments. The pains in the back were relieved for a period of eight months. In September, 1927, the pains recurred and gradually became severe. November 3, roentgen-ray examination of the dorsal spine by Dr. Lewis Gregory Cole revealed a very marked increase in density throughout the body of the eighth dorsal vertebra. The seventh and ninth dorsal vertebrae showed changes, but to a lesser degree. The fourth lumbar vertebra was also involved. The changes noted were proliferative rather than destructive in character. The pelvic bones, femurs and skull did not show any evidence of bone involvement. A transverse myelitis developed at the ninth dorsal vertebra. Twenty-one thousand milligram hours of radium at 6 cm. distance was applied to the anterior and posterior chest wall and lumbar region and the paralysis gradually disappeared after four weeks. December 17, the complete blood count was: red blood cells, 3,400,000; hemoglobin, 75 per cent; leukocytes, 4,000; polymorphonuclears, 79 per cent; lymphocytes, 15 per cent; mononuclears, 5 per cent, and eosinophils, 1 per cent. The total radium dosage has been approximately 80,000 milligram hours. During the past three months the general condition of the patient has become worse, with involvement of the spleen and liver.

Fig. 1.—Involvement of ninth dorsal vertebra with Hodgkin's disease.

Fig. 2.—Involvement of fourth lumbar vertebra with Hodgkin's disease.

Although Hodgkin's disease is usually fatal, irradiation, particularly with radium, relieves pain, reduces tumor masses and prolongs the life of the patient from several months to a few years.

120 East Seventy-Fifth Street.

BLADDER OR DEEP URETHRAL INJURY: THE INTRODUCTION OF AIR AS AN EARLY DIAGNOSTIC MEASURE

DANIEL N. EISENDRATH, M.D., AND HARRY C. ROLNICK, M.D.
CHICAGO

In July, 1927, a man, aged 32, entered the Cook County Hospital with the history of having been thrown from an automobile about thirty hours previously. He had been unable to void any urine since the time of the injury. Examination revealed marked muscular rigidity and tenderness over the lower half of the abdomen, the pulse was small and rapid (132) and the patient appeared very ill. On catheterization, no resistance was encountered in the deep urethra and 800 cc. of slightly turbid urine was obtained.

A plain roentgenogram (fig. 1 *A*) failed to reveal any fracture of the pelvis.

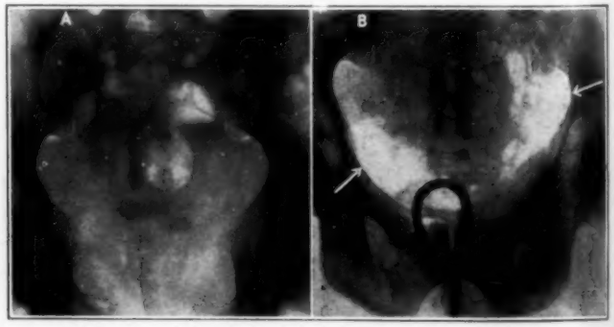

Fig. 1.—Appearance before (*A*) and after (*B*) introduction of air: In *A* the shadows of the tissues of the true pelvis are uniform; in *B* the lighter areas behind the pubis and along the lateral aspects of the true pelvis (indicated by arrows) are due to the presence of air.

The presence of the suprapubic rigidity and tenderness with the accompanying symptoms of toxinemia (rapid pulse, restlessness) were the only observations indicative of an injury of one of the structures (bladder, deep urethra and prostate) of the true pelvis. In spite of the negative roentgenogram, negative examination of the scrotum and perineum and the 800 cc. of urine obtained on catheterization, we felt that the patient's condition was one of bladder or deep urethral injury and that further diagnostic study was necessary before exploration was indicated.

It was felt that such a puzzling case would be an ideal one for the application of the method suggested by Vaughan and

Rudnick[1] of introducing from 50 to 100 cc. of air through a urethral catheter and making some x-ray exposures. In negative cases, the air fills only the bladder. In extraperitoneal rupture of the bladder the air spreads along the fascial planes of the pelvis (similar to fig. 1 *B*). In intraperitoneal rupture, the air is seen, in lateral exposures, to form a transparent layer beneath the anterior abdominal wall.

We carried out this technic about two hours after the patient's admission to the hospital. The translucent areas due to the entrance of the air into the tissues around the bladder were very evident in the anteroposterior exposure made immediately after injection of the air. The arrows in figure 1 *B* point to these more translucent areas along the sides of the true pelvis.

Following the passage of the catheter just prior to the introduction of the air, about 100 cc. of bloody urine escaped. The results of the x-ray examination appeared to confirm our suspicion of an extraperitoneal rupture of the bladder, so that operation was deemed indicated. When the prevesical space (fig. 2) was opened, a large quantity of urine escaped not only from the tissues in front of but also from those on both sides of the bladder.

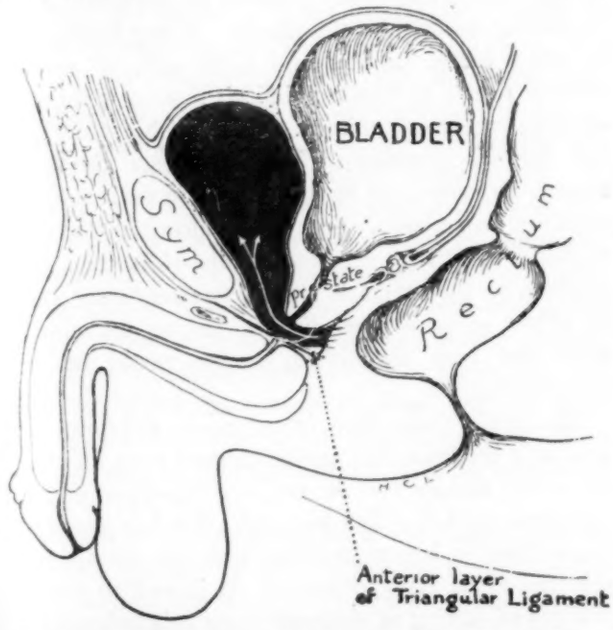

Fig. 2.—Reconstruction of operative observations: The membranous urethra is shown completely divided just behind the anterior layer of the triangular ligament. The urine, as indicated by arrows, escaped into the perivesical tissues (compare with figure 1 *B*).

Further examination revealed that there had been a complete division of the membranous urethra in such a manner as to leave intact the firmer anterior layer of the triangular ligament. As a result of this injury, none of the urine had escaped into the scrotum or anterior abdominal wall because of the attachment of Colles' fascia.[2] The bladder was opened and drained through the suprapubic incision and a catheter passed to the bladder (with the aid of the hand in the suprapubic incision) through the entire length of the urethra.

The patient made an uneventful recovery for about a week but developed delirium tremens and died about two weeks after the injury. From our experience in this case, we can warmly recommend the use of the Vaughan-Rudnick method as an early diagnostic measure in injuries of the bladder or deep urethra.

104 South Michigan Avenue—31 North State Street.

1. Vaughan, R. T., and Rudnick, D. F.: A New and Early Sign of Ruptured Bladder, J. A. M. A. **83:** 9 (July 5) 1924.
2. Wesson, M. B.: Surg. Gynec. Obst. **45:** 208 (Feb.) 1927.

Myocarditis.—Cardiac failure with essential hypertension, old valve defects, coronary sclerosis, coronary thrombosis, toxic myocardium, and syphilitic aortitis is commonly diagnosed acute or chronic myocarditis without regard to the pathological condition of the heart.—Clawson, B. J.: *Am. Heart J.*, October, 1928.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

PHENTETIOTHALEIN SODIUM.—Phentetiothaleinis Sodium.—Phenoltetraiodophthalein Sodium.—$NaO.O:C.C_6I_4.C:C_6H_4OC_6H_4ONa$. The sodium salt of a dibasic dye, phenoltetraiodophthalein. Phentetiothalein sodium contains from 56 per cent to 59 per cent of iodine.

Actions and Uses.—Phentetiothalein sodium is used for the roentgenologic examination of the gallbladder and simultaneous test of hepatic function. Following the intravenous injection, the solution appears in the normal gallbladder in sufficient concentration to cast a shadow to the roentgen rays and if the liver is damaged it is retained in the blood in amounts indicative of the extent of impairment. It is claimed to cause little or no toxic reaction.

Dosage.—Intravenously for visualization of the gallbladder and simultaneous test of liver function, 40 mg. per kilogram of body weight; the dose need not exceed 2.5 Gm., regardless of weight. The dye is dissolved in freshly distilled water, filtered through fine filter paper, and sterilized for fifteen minutes in a boiling water bath. A solution of 8 per cent has been found satisfactory. The solution is injected intravenously by gravity or syringe method, either in the morning between 8 and 9 or in the evening between 5 and 9. If given in the evening the evening meal should be omitted and no food given until the first roentgenogram is taken in the morning. At this time a fat meal is given and the roentgenogram taken one hour after the meal and, if desired, another three hours after the meal to determine the rapidity and characteristics of emptying. More satisfactory results are probably obtained if the injection is made in the morning with the stomach empty, omitting breakfast and lunch and taking roentgenograms four, eight and twenty-four hours after the injection. For gallbladder visualization alone the drug is administered orally in the form of capsules or pills coated with phenyl salicylate; average dose, 5 Gm. administered in pills or capsules of 1 Gm. each during the evening meal. Breakfast is omitted. Since the capsules may not be dissolved, any abnormality found by the oral method should be checked up by the intravenous method. The liver function test cannot be made by this method because the dye is not absorbed rapidly enough into the blood.

To make the determination of liver function, blood is collected one-half hour and again preferably one hour after the intravenous injection. The serum is alkalized with a small drop of 5 per cent solution of sodium hydroxide and compared to a set of standard solutions as suggested by Rosenthal (An Improved Method for Using Phenoltetrachlorphthalein as a Liver Function Test, *J. Pharmacol. & Exper. Therap.* **19:**385 [June] 1922) and modified by Cole, Copher and Graham (Simultaneous Cholecystography and Determination of Liver Function, J. A. M. A. **90:**1111 [April 7] 1928).

Phentetiothalein sodium occurs as bronze purple, odorless, slightly hygroscopic granules. It is soluble in water and alcohol.

Dissolve 1 Gm. of phentetiothalein sodium in water: a clear solution appears. Add diluted hydrochloric acid drop by drop to 1 cc. of a 10 per cent aqueous solution of phentetiothalein sodium: a yellow colored precipitate appears. Add sodium hydroxide solution in large excess to 1 cc. of a 10 per cent aqueous solution of phentetiothalein sodium: a permanent purple color appears.

Intimately mix 0.1 Gm. of the salt with 1.0 Gm. of anhydrous sodium carbonate and heat to fusion; cool the mixture, dissolve in diluted hydrochloric acid and filter; add a few drops of hydrogen peroxide solution and agitate the mixture with a few cubic centimeters of chloroform: the chloroform layer is colored violet (*iodine*).

Transfer about 0.5 Gm., accurately weighed, of phentetiothalein sodium to a flat type weighing bottle and dry in a vacuum at 80 C. to constant weight: the loss in weight is not more than 5 per cent.

Transfer about 0.2 Gm., accurately weighed, of phentetiothalein sodium to a bomb tube; determine the iodine by the Carius method: the amount of iodine found is not less than 56 per cent nor more than 59 per cent when calculated to the dry basis.

Iso-Iodeikon.—A brand of phentetiothalein-N. N. R.

Manufactured by the Mallinckrodt Chemical Works, St. Louis. No U. S. patent or trademark.

Iso-Iodeikon, 2.5 Gm. Ampoules.

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SATURDAY, NOVEMBER 17, 1928

THE ALLEGED VALUE OF FASTING IN EPILEPSY

Among the recurring fads promulgated in the interest of restoring human well being when it has been impaired through the inroads of disease, fasting is often listed. The starvation cult includes not a few devotees, and some of the stories circulated with regard to the restoration of health through prolonged abstinence from food border on the miraculous. Any one educated in the precepts of modern physiology finds it difficult to look on deprivation of the sources of energy as a fundamentally correct procedure in the management of an organism equipped by nature for a metabolism of matter. The bodily functions require food fuel sooner or later, though a temporary debit can be instituted without immediate detriment. Man is not a hibernating animal. Tissue respiration proceeds regardless of the seasons or the exhibition of nutriment; and the exchange of energy is at once greatly increased when muscular activity comes into play.

A starvation treatment lasting several weeks in some instances has been advocated in this country for the treatment of epilepsy. This disorder is so distressing in its manifestations, so dismal in its outlook, and has been so resistant to prolonged relief by medical means that almost any procedure is likely to be welcomed into the program of experimental therapeutic trial. There has been no lack of special dietary measures proposed in the past for the relief of epilepsy. One may recall that in addition to general hygienic measures such regimens as salt-free diets, purine-free rations, lacto-vegetarian living and abstention from all proteins of animal origin have been urged with varying enthusiasms on helpless sufferers. In some instances, benefits have doubtless accrued. The epileptic patient is particularly susceptible to alimentary upsets, so that special dietary measures may be provocative of relief in individual instances. The salt-free diet may serve a useful purpose in connection with the elimination of bromides when the latter enter into the scheme of treatment.

There are sufficient reports from dependable sources to leave no doubt that many epileptic patients experience improvement during fasts. Yet it happens unfortunately that seizures recur after the resumption of food.[1] A recent study by Lennox and Cobb[2] of the Harvard University Medical School includes records of twenty-seven patients with convulsions who have fasted for periods of from four to twenty-one days. Except in one patient, there was little permanent effect on the seizures. In the majority of patients, seizures were absent or greatly reduced during the fast itself. Lennox and Cobb admit that fasting may be useful as an emergency procedure for certain patients. In status epilepticus or serial seizures it is probable that the involuntary fast resulting from the patient's inability to take nourishment may often be an important factor in causing cessation of the attacks. It may be employed in other cases, Lennox and Cobb add, to tide the patients over a particularly difficult time or when status epilepticus seems imminent. It would be strange, say the Boston investigators, if any acute therapeutic dietetic measure gave lasting results in such a chronic condition as epilepsy. One is not surprised, therefore, with the essentially negative results of fasting. It is possible, as they remark, that if this treatment should be given early in the disease, before the epileptic habit had been established, results would be more encouraging.

Abstention from food is commonly provocative of ketosis, a condition that can be induced more effectively by a diet unduly rich in fat in comparison with the carbohydrate fed. The ketogenic diet has acquired a vogue that is better justified, and has already been referred to in THE JOURNAL.[3] It is well to face the realities of fasting as observed in animals before adopting fasting as a beneficial rejuvenating experience. Lennox and Cobb wisely remind us that in human

1. Geyelin, H. R.: Fasting as a Method for Treating Epilepsy, M. Rec. **99**: 1037, 1921; Diet and the Endocrines in Epilepsy, Clin. Med. & Surg. **35**: 322 (May) 1928. Bigwood, E. J.: L'équilibre physicochimique du sang dans l'épilepsie, Ann. de méd. **15**: 24 (Jan.), 119 (Feb.) 1924. Goldbloom, A.: Some Observations on the Starvation Treatment of Epilepsy, Canad. M. A. J. **12**: 539 (Aug.) 1922. Vollmer, H., and Serebrijski, J.: Epilepsiestoffwechsel, Ztschr. f. Kinderh. **41**: 314 (June) 1926. Shaw, E. B., and Moriarty, Margaret E.: Hypoglycemia and Acidosis in Fasting Children with Idiopathic Epilepsy, Am. J. Dis. Child. **28**: 553 (Nov.) 1924. Hoeffel, G. N., and Moriarty, Margaret E.: The Effect of Fasting on the Metabolism of Epileptic Children, ibid. **28**: 16 (July) 1924. Talbot, F. B.; Metcalf, K. M., and Moriarty, Margaret E.: A Clinical Study of Epileptic Children Treated by Ketogenic Diet, Boston M. & S. J. **196**: 89 (Jan. 20) 1927; Epilepsy: Chemical Investigations of Rational Treatment by Production of Ketosis, Am. J. Dis. Child. **33**: 218 (Feb.) 1927. Schou, H. I., and Teglbjoerg, H. P. S.: Behandling Epilepsi med Inanitionskure og Inanitionens Virkning pa Dysregulatio ammoniaci, Hospitalstid. **68**: 49 (Jan. 22) 1925. Karger, Paul: Der klinische Wert der Hungertherapie bei der Epilepsie der Kinder und der Einfluss einzelner Nahrungsbestandteile auf die Anfälle, Klin. Wchnschr. **5**: 502 (March 19) 1926. Riddoch, G.: Discussion on Epilepsy, Proc. Roy. Soc. Med. **20**: 864 (April) 1927. Weeks, D. F.; Allen F. M.; Renner, D. S., and Wishart, M. B.: Fasting and Diets in Treatment of Epilepsy, J. Metab. Research **3**: 317 (Feb.) 1923.

2. Lennox, W. G., and Cobb, Stanley: Studies in Epilepsy: VIII. The Clinical Effect of Fasting, Arch. Neurol. & Psychiat. **20**: 771 (Oct.) 1928; Epilepsy from the Standpoint of Physiology and Treatment, Baltimore, Waverly Press, 1928.

3. The Treatment of Epilepsy, editorial, J. A. M. A. **88**: 1638 (May 21) 1927. Peterman, M. G.: Epilepsy in Childhood, ibid. **88**: 1868 (June 11) 1927. Helmholz, H. F.: The Treatment of Epilepsy in Childhood, ibid. **88**: 2028 (June 25) 1927. Peterman, M. G.: The Ketogenic Diet, ibid. **90**: 1427 (May 5) 1928.

beings it is often a severe ordeal for the body. Because of the attendant acidosis, most patients, while without food, are dull and lethargic. Two of their patients developed an acute psychosis, which cleared up when the fast was broken. As a result of the Boston observations—as well as of those reported by other unprejudiced observers—Lennox and Cobb believe that fasting has no place in the routine care of those afflicted with recurrent convulsions except as a means of inaugurating a high-fat diet. Patients who are helped by fasting will receive even more benefit from continued use of a ketogenic diet.

THE TREATMENT OF ANEMIAS

Certain discoveries of recent months with respect to the management of conditions in which there is a deficit of red blood cells in the circulation have been so striking that they have quickly received wide recognition. Notable are the observations of Whipple and his associates at the University of Rochester, N. Y., on the hematopoietic response of dogs rendered anemic by hemorrhage to dietary substances as seemingly different in character as are liver and apricots. Equally striking are the now well known responses of patients with pernicious anemia to ingestion of liver or kidney or extracts of these organs. Most recent are the significant observations of Hart, Steenbock and their co-workers at the University of Wisconsin on the effect of copper salts in the experimental so-called nutritional anemia of rats.

Common to all the conditions is the existence of an anemia expressed in a low erythrocyte content of the blood. Beyond this there is not necessarily any greater similarity of pathologic state than might exist in a group of patients characterized by the common symptom of fever. Nevertheless there have been hurried attempts to "capitalize" the newer knowledge in the treatment of anything that may be vaguely designated as anemia. Warnings have, of course, already been sounded against the unwisdom if not actual menace of treating similar symptoms by the same method regardless of their etiology. The striking improvements seen in the treatment of pernicious anemia with liver have not been duplicated in the case of secondary anemias in man. In one instance a retarded hematopoietic organ may lack a proper stimulus to liberate new corpuscles in place of others rapidly lost in some way. In another there may be a shortage of appropriate "building stones" from which erythrocytes can be produced in abundance by organs ready to function. In one case it may be a specific hormone, in the other some substance—iron or what not—that is needed primarily.

The reports of the effects of copper salts on anemic rats have led to the guess—it can scarcely be called an assumption—that the inorganic components in liver, kidney or apricots are responsible for their alleged potency in blood regeneration, usually regardless of the type of anemia involved. Robscheit-Robbins, Elden, Sperry and Whipple [1] have recently reported that the inorganic ash of dried apricots retains most of the potency of the whole apricot and can exert the same favorable influence on red cell and hemoglobin regeneration when incorporated into the diet of "standard" anemic dogs. The inorganic ash of beef liver and pig kidney is likewise potent in this type of experimental anemia, but this ash contains only about half the potent factors present in the whole cooked liver or kidney. All these foods contain copper as well as iron in the ash. In the experimental anemia due to bleeding in dogs, Elden, Sperry, Robscheit-Robbins and Whipple [2] admit that certain metals and their salts when added to the standard diet have a distinct influence and increase hemoglobin production. Copper has a positive effect, although moderate in degree, and usually increases somewhat the hemoglobin production above control levels. The iron salt effect is much more notable in their experiments than the copper effect. Combined copper and iron feeding may at times have an unusually favorable effect or again may not exceed the favorable influence of the iron salt feeding alone. The Rochester investigators believe that the evidence now available for secondary anemias points to a group of substances rather than one single substance as being responsible for the increased hemoglobin production in experimental anemia due to bleeding in dogs. It is obvious from the ash feeding experiments that the salts of metals are important—they belong in the group of potent substances—but no one can yet say that the ash potency resides in one salt or a salt mixture. The evidence seems to favor the belief that a balanced salt mixture is responsible for the favorable ash reaction and increased hemoglobin production in this type of anemia. Furthermore, Whipple and his collaborators remind us of the experiments of Mallory [3] and others which indicate that copper salts may be toxic. The doses used by them are large, but they note that some animals are much more susceptible than others. It is not known whether human beings are more sensitive to copper than are animals or whether an anemic patient may be more sensitive than a normal person. This point should be emphasized, Whipple adds, to indicate reasons for caution in the administration of copper salts in human anemia, as a toxic cirrhosis would be more of a liability to a patient than even a stubborn

1. Robscheit-Robbins, Frieda S.; Elden, C. A.; Sperry, W. M., and Whipple, G. H.: Blood Regeneration in Severe Anemia: XII. Potent Influence of Inorganic Ash of Apricots, Liver, Kidney and Pineapple, J. Biol. Chem. **79**: 563 (Oct.) 1928.

2. Elden, C. A.; Sperry, W. M.; Robscheit-Robbins, Frieda S., and Whipple, G. H.: Blood Regeneration in Severe Anemia: XIII. Influence of Certain Copper Salts upon Hemoglobin Output, J. Biol. Chem. **79**: 577 (Oct.) 1928.

3. Mallory, F. B.; Parker, F., Jr., and Nye, R. N.: J. M. Research **62**: 461, 1921.

anemia which might yield to suitable diet therapy. The treatment of any sort of anemia today calls for intelligent caution and judgment.

THE SELF SELECTION OF DIET IN INFANCY

In nature, the various species of animals appear to thrive on food chosen by instinct. The food materials thus selected cover a wide range. Their variety is attested by the fact that some species are herbivorous, some carnivorous, and others omnivorous; yet somehow the result of their different eating habits seems to be nutritive success. These familiar circumstances have often prompted the inquiry whether the instincts of man are not fundamentally better guides in the selection of a diet than are the changing prescriptions designed by the so-called nutrition experts. Formulation of dietaries has become far more restrictive for the adolescent than for the adult. The preschool age, after the period of weaning, is particularly subject at present to definite food prescriptions. Yet many years ago Pereira wrote:

> The natural appetite I believe to be an index of the wants of the system; and ought, therefore, to be consulted, to a certain extent, in the dieting of children; and I believe that parents commit a gross error who totally disregard it. I have seen children refused vegetable food, though they ardently desired it, because they would not eat what their nurses supposed to be the proper proportion of animal food; and, on the other hand, I have known children denied animal food, on the mistaken notion that it would be injurious to them, though the digestive functions were active, and the appetite for meat most keen.

Free choice of food is not easily exercised in the case of man under the conditions of civilized life. Economic, seasonal, traditional and other influences restrict the field of selection. The fact that experience and experiment have succeeded in developing what appear to be highly satisfactory regimens for almost all ages is not a final challenge to the possible value of promoting the instinctive choice of food. Tests have repeatedly shown that, when animals are allowed to make their own selections from a variety of foods not one of which is in itself a complete nutrient, the nutritive result almost always is satisfactory. In other words, the instincts prove to be safe guides.

Recently Davis[1] allowed newly weaned infants to choose their own foods in such quantities as they might desire from a fairly wide range of commonly used natural food materials, unmixed, unseasoned and unaltered except, in the case of some, by cooking in the simplest manner. It was hoped that this test, carried out over many months, might throw some light on the question of whether the infant at this age has any instinctive means of handling either qualitatively or quantitatively the problem of nice adjustment of the various food elements, organic and mineral, necessary to optimal nutrition. At the period of life selected, artificial eating habits have not been formed. Only our acquired prejudices remain to hamper the experiment. The foods included a wide range of products prepared as simply as possible. Combinations such as custards, soups or bread were not used, thus insuring that each food when eaten was chosen for itself alone.

The reactions of the infants untrained through the conventional weaning procedures, to such an array of products, may be regarded as amazing. The children apparently made selections in quantities sufficient to maintain themselves with apparently optimal digestive and, as far as immediate results could be judged, good nutritional results. They were omnivorous and in eating, it is reported, not only were governed by their caloric needs but showed definite preferences, which, however, changed from time to time and were unpredictable. In the judgment of the investigator, thus far, support is not given to the prevailing belief that the infant of this age cannot, because of his age, digest or use any of these simple natural foods of adult life, or that glands or muscle cuts of meat that have been shown to be especially valuable proteins in the variety and combinations of their amino-acids should be excluded from their diet.

One may contrast with these few experiments the somewhat rigid prescriptions of writers on nutrition. Because a baby is not made violently ill by tea, coffee, sugar, sweet crackers and what not, Professor Rose[2] writes, it does not follow that these are desirable. The perversion of his appetite, so that he does not desire the foods that are best for him, is a serious matter, though the results are not immediately apparent. The child's chief business in life is to grow strong and develop good habits. Regular hours for eating and sleeping, regular supplies of carefully chosen food, and plenty of fresh air mean the development not only of sturdy legs and rosy cheeks but also of good eating habits and a strong digestive tract able to stand the inevitable strains of later life. Good growth in this part of the body cannot be seen directly, Mrs. Rose adds, but it counts tremendously when the whole life is in review. One year of good feeding at the beginning of life is more important than ten years after 40, and a baby's needs are not to be judged by an adult's inclinations. Mrs. Rose concludes that feeding must be a matter of principle and not of impulse; the reward will be partly in the present—much more in the future.

The Davis experiments indicate that a moderate deviation from the fixed conventions of infant and child feeding may be attempted without fear of untoward outcome. No one, however, can gainsay the scientific evidence that establishes the great advantages following the application of scientific knowledge in place of tradition in the feeding of children. The child welfare programs and their results are eloquent testimony on this point.

1. Davis, Clara M.: Self Selection of Diet by Newly Weaned Infants, Am. J. Dis. Child. **36**: 651 (Oct.) 1928.

2. Rose, Mary Swartz: Feeding the Family, New York, Macmillan Company, 1924.

Current Comment

DEATHS FROM CONTAMINATED TOXIN-ANTITOXIN

At Bundaberg, Australia, last January, twelve of twenty-one children inoculated with toxin-antitoxin at one time died within the next two days. An extensive investigation [1] was made into the causes of the fatalities. The mixture used was issued in rubber-capped bottles, but without the addition of an antiseptic, in order to avoid possible risks from freezing. The intention was to give warning that each bottle should be entirely used at one time, but unfortunately the warning was omitted at first, and fluid was withdrawn from one bottle several times in the course of a week. From five to eight hours after the last injections, more than half the children treated became seriously ill, with signs of severe toxemia, vomiting and diarrhea, fever, circulatory collapse, and in many cases convulsions. The deaths followed in from fifteen to thirty-five hours after injection. Abscesses developed at the site of inoculation in six other children, and only three remained unaffected. Subsequent investigation revealed that the bottle of toxin-antitoxin in question became cloudy the day following use, and staphylococci were cultivated from the remaining fluid. Organisms of the same type and serologically identical were cultivated from the abscesses. It was possible by careful investigation to rule out other causes of the deaths, such as tetanus, anaphylaxis, or the presence of free toxin in the mixture. Postmortem examination showed the most constant change in the bodies to be degeneration of the lymphoid tissue, as might be caused by severe infection, whereas the changes commonly associated with diphtheria toxin, myocarditis, hemorrhage into the suprarenals, were absent. The symptoms and the postmortem and bacteriologic observations were all suggestive of an overwhelming infection with staphylococci, causing in many cases death without time for the development of obvious lesions, and in others only local abscesses. Evidently the vial was contaminated during the previous injections, and in the absence of an antiseptic the organisms multiplied in the fluid. The danger is clearly revealed of issuing biologic products without antiseptic in the rubber-capped vials commonly used for vaccines intended for repeated injections. Any such product, prepared without preservatives, should of course be used on only one occasion and the remainder discarded. The extremely thorough investigation of the deaths at Bundaberg has shown beyond reasonable doubt that they were due to an unfortunate accidental contamination of the product used and not to an inherent fault in the method of immunization. Such accidents are avoidable by proper care in issuing the products and correct technic in their use. The methods of modern science are potent methods and hence are neither fool nor accident proof. Millions of persons are transported on railroads, and occasional accidents kill hundreds. Millions of children have been inoculated safely against smallpox and diphtheria, but occasional accidents result in death. As in other cases, the causes must be sought and if possible removed. Apparently, human beings being what they are, some accidental deaths are inevitable.

1. Report of the Royal Commission of Inquiry into Fatalities at Bundaberg, Canberra, 1928.

Association News

ADDITIONAL HOSPITALS AND LABORATORIES APPROVED

The Council on Medical Education and Hospitals of the American Medical Association at a recent meeting gave its approval to additional hospitals and clinical laboratories, as follows:

Hospitals approved for intern training:

Danbury Hospital, Danbury, Conn.
Meriden Hospital, Meriden, Conn.
Columbus Hospital, Chicago.
St. Anthony's Hospital, Rock Island, Ill.
Flint-Goodridge Hospital, New Orleans
St. Mary's Hospital, Saginaw, Mich.
Spartanburg General Hospital, Spartanburg, S. C.
St. Joseph's Hospital, Parkersburg, W. Va.
Providence Hospital, Seattle.
Kingston General Hospital, Kingston, Ontario.

Hospitals approved for residencies in specialties:

Decatur and Macon County Hospital, Decatur, Ill.
Baltimore City Hospitals, Baltimore.
University of Maryland Hospital, Baltimore.
The Deaconess Hospital, Cincinnati.
Children's Orthopedic Hospital, Seattle.

Clinical laboratories approved:

Clinical Laboratory, B. Martell, M.D., Director, Santa Ana, Calif.
Physicians' Clinical Laboratory, V. D. Keiser, M.D., Director, Indianapolis.
Finley Hospital Laboratory of Pathology, Frank P. McNamara, M.D., Director, Dubuque, Iowa.
The Diagnostic Laboratories of the Bulluck Hospital, Ernest S. Bulluck, M.D., Director, Wilmington, N. C.
Northwest Clinic, C. J. Watson, M.D., Director, Minot, N. D.
Laboratory of Dr. S. S. Hindman, Toledo, Ohio.
Private Laboratory of Dr. J. H. Litterer, Nashville, Tenn.
The Queen's Hospital Laboratory, Nils P. Larsen, M.D., Director, Honolulu, Hawaii.

MEDICAL BROADCAST FOR THE WEEK

The American Medical Association Morning Health Talks and Evening Health Hints from Hygeia

The American Medical Association broadcasts daily at 10 o'clock in the morning, central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week of November 19 to 24 will be as follows:

November 19. "Digestion and Indigestion," by Dr. Morris Fishbein.
November 20. "Fooling the Fat," by Dr. Arthur J. Cramp.
November 21. "The Chemical Analysis of Medicine," by J. B. Peterson, Ph.D.
November 22. "U. S. Supreme Court and Public Health," by Mr. J. W. Holloway.
November 23. "Medical News," by Dr. J. F. Hammond.
November 24. "Animal Pets and Disease," by Dr. James Nall.

Evening Health Hints from Hygeia at 8 o'Clock, Central Standard Time

November 19. Exercise Your Lungs.
November 20. What Poisons Kill Children.
November 21. Once Upon a Time.
November 22. How the Young Child Learns.
November 23. Heating the House Efficiently.
November 24. Origin of the Word "Hygiene."

THE CONVENTION CITY

Advantages Revealed by Local Committee

Portland has two special claims for distinction as a convention city. The first claim lies in the fact that it probably has more golf courses than any other city of its size in the country. The City of Roses has eight splendid private golf clubs and ten of the pay-as-you-play type, which, because of the equable climate, are used almost every day in the year. The courses can all be reached by a short drive from the business center.

Portland's second distinction as a convention city consists in the abundant hotel facilities available for visitors. A survey made recently showed that the Rose City has accommodations

which are exceeded by only ten of the largest cities in the country. Portland, although only the twenty-fourth city in population, thus ranks eleventh from the standpoint of hotel facilities. The city has fifty-six acceptable hotels with a total capacity of 7,039 rooms, 4,258 of which have baths.

Portland's exceptional hotel accommodations and golfing facilities are doubtless partly responsible for the unusual interest being shown in the forthcoming session by Fellows of the Association throughout the country. Requests for hotel reservations have already been received from physicians in California, Illinois, Indiana, Iowa, Massachusetts, Michigan, Missouri, Nebraska, New York, Ohio and Pennsylvania. The attendance promises to exceed that of any other American Medical Association meeting ever held on the Pacific Coast.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

First Year in Registration Area.—Arkansas was admitted to the registration area in 1927. The U. S. Department of Commerce announces that the death rate for the state during that year was 952 per hundred thousand of population. The highest death rates were for heart disease (90 per hundred thousand); tuberculosis (77); nephritis (61); pneumonia (54); malaria and cancer (each 42); pellagra (34); typhoid and paratyphoid (23), and homicide (16). The estimated population of Arkansas for 1927 was 1,923,000.

CALIFORNIA

Society News.—Dr. Joseph E. Tyree, Salt Lake City, addressed the annual meeting of the San Diego County Medical Society, November 13, on "Observations on Surgery of the Feet."——The annual clinic lecture will be delivered at La Jolla, January 5, by Dr. Leonard G. Rowntree, Mayo Clinic, Rochester, Minn., on "Nephritis." Members of the San Diego County Medical Society are invited.——The semiannual meeting of the Southern California Medical Society was held at Los Angeles, November 9-10. Among others, Dr. William D. Cutter, University of Southern California Medical School, spoke on "Medical Education"; Maude Slye, Ph.D., assistant professor of pathology, University of Chicago, on "Relation of Heredity to Occurrence of Cancer"; Dr. Milton J. Geyman, Santa Barbara, "Massive Atelectasis"; Francis M. Smith, La Jolla, "Observations on the Influence of the Vagus on Cardiac Mechanism," and Dr. Hall Holder, San Diego, on "Treatment of Preoperative and Postoperative Cardiovascular Complications."——Dr. Paul J. Hanzlik addressed the San Francisco County Medical Society, November 13, on "Prevention of Toxin Poisoning with Colloidal Dyes, Indicating a New Principle for Chemotherapy"; W. Scott Polland and Dr. Arthur Bloomfield on "Observations on Measurement and Significance of Pepsin in Gastric Juice"; Frederick L. Reichert, "Circulatory Diseases of the Extremities with Particular Reference to Thrombo-Angiitis Obliterans," and William E. Stevens on "Urology in Infants and Children." The directors of the society, October 9, fixed the dues for members who have been out of school not more than three years at $15, effective Jan. 1, 1929.

ILLINOIS

Society News.—The fifty-second annual meeting of the Central Illinois Medical Society was held at Pana, October 30. Clinics were conducted at the Huber Memorial Hospital, Pana, and in the afternoon a series of papers was read; Dr. Samuel B. Herdman, Taylorville, was made president for the ensuing year, and Dr. Franklin A. Martin, Pana, secretary.

A Memorial to Hodgen and Mudd Unveiled.—About 150 physicians attended the unveiling of the boulder memorial at Pittsfield, October 30, in honor of two boys who were reared in that community and later became eminent and widely known physicians, Drs. John T. Hodgen and Henry Hodgen Mudd. Preceding the ceremony a dinner was served by the ladies of the church, followed by a number of informal brief talks by guests from various distant places. Mayor Halpin welcomed the visitors and Dr. William E. Shastid was toastmaster. Among those who spoke at the unveiling were Dr. H. Mudd, a nephew of Dr. Henry Hodgen Mudd, Dr. Roland Hill, St. Louis, and Dr. T. Guy Hetherlin, Louisiana, Mo. The inscription on the tablet fixed in the large boulder, which had been provided for and from this community, was as follows:

In Memory Of
JOHN THOMPSON HODGEN, M.D.
Born Hodgenville, Ky., Jan. 17, 1826
Died St. Louis, Mo., April 28, 1882
Professor of Surgery, St. Louis Medical College
President of the American Medical Society
and
HENRY HODGEN MUDD, M.D.
Born Pittsfield, Ill., April 27, 1844
Died St. Louis, Mo., Nov. 20, 1899
Dean and Professor of Surgery, St. Louis Medical College

Chicago

Personal.—Victor E. Emmel, Ph.D., professor and head of the department of anatomy, University of Illinois College of Medicine, died suddenly of heart disease, November 7, while boarding a train at Glen Ellyn.——According to the Chicago *Tribune*, all former votes for any candidate in Cook County were exceeded, November 6, when 1,076,485 votes were cast for Dr. Herman N. Bundesen for coroner. Dr. Bundesen was formerly health commissioner of Chicago.

Society News.—Dr. Frederick B. Moorehead gave an illustrated lecture on "Plastic Surgery from the Standpoint of the Layman and the Surgeon," November 11, at the Chicago Academy of Sciences in Lincoln Park; this was one of a series of free public lectures offered by the museum.——The Illinois Society for Mental Hygiene will hold its annual meeting at the Medical and Dental Arts Club, 185 North Wabash Avenue, November 21, on the general subject "What is Illinois Doing for Its Mentally Afflicted?" The speakers will be Dr. Ralph C. Hamill, Chicago, president; Dr. H. Douglas Singer, formerly acting medical director of the society; Dr. Charles F. Read, Dr. Warren G. Murray of the Dixon (Ill.) State Hospital and Judge Mary Barthelme and Frank J. Loesch, president of the Chicago Crime Commission. The dinner will precede the evening session at the club, and reservations may be made by addressing the secretary, 203 North Wabash Avenue.——The Chicago League for the Hard of Hearing held its ninth annual bazaar at St. James Parish House, 666 Rush Street, November 10.——The Chicago Orthopedic Club will meet with the Clinical Orthopedic Society for a two day clinical program, November 19-20; clinics will be held at the Cook County and Shriners' hospitals, the Hospital for Crippled Children, St. Luke's Hospital and the Home for Destitute Crippled Children.——At the November 15 meeting of the Chicago Neurological Society, among others, Dr. Maurice L. Blatt gave a moving picture demonstration on rabies in childhood and Dr. Tom B. Throckmorton, Des Moines, Iowa, read a paper on "Intermittent Muscular Spasms, Resembling Jacksonian Epilepsy, Complicating Recurrent Epidemic Encephalitis."——The Chicago Tuberculosis Society will be addressed, December 13, at the Medical and Dental Arts Club by Dr. Chester M. Van Allen on "Air Embolism Arising from Pulmonary Vein."——The Institute of Medicine of Chicago will hold its thirteenth annual meeting, December 4. Following the dinner for members of the institute, the meeting will be open to the public. The program will include the address of the president, Dr. John Gordon Wilson, on "Edinburgh and American Medicine" and an address by Sir William A. Craigie, one of the editors of the Oxford English Dictionary, entitled "Scotland and Americanisms."

INDIANA

Society News.—The Indiana Society for Mental Hygiene will hold its thirteenth annual meeting in the Claypool Hotel, Indianapolis, December 10. Among the speakers will be E. R. Johnstone, director, Training School for Feeble Minded, Vineland, N. J., and Dr. Herman M. Adler, Chicago. The society solicits the cooperation of all groups and individuals interested in the promotion of mental health, and invites them to become members of the society. A program of the annual conference can be had by addressing the secretary, J. A. Brown, 416 State House, Indianapolis.——Among others, Dr. William F. Clevenger addressed the Indianapolis Medical Society, November 6, on "Epidemic Meningitis Simulating Mastoiditis," and Dr. James N. Collins on "Paget's Disease." There were seven papers on the program, each limited to ten minutes; several of them were on the subject of mastoiditis.——The Monroe County Medical Society, Bloomington, was addressed, October 24, by Dr. Willis D. Gatch, Indianapolis, on complications of acute appendicitis.——The Indianapolis Medical Society will be

addressed, November 20, by Dr. Elmer I. McKesson, Toledo, Ohio, on "Modern Anesthesia; Modes of Action and Its Relation to Operative and Postoperative Results" (motion pictures). ——The Indianapolis Community Fund is conducting a campaign to raise $781,000, which is $55,000 more than any amount hitherto raised for its work because of the debt incurred during the last year in order to prevent suffering.

LOUISIANA

Personal.—Dr. Russell C. Pigford has resigned as instructor in the department of medicine of Tulane University, New Orleans, to engage in practice in Tulsa, Okla.——Dr. Arthur Vidrine has been appointed superintendent of the Charity Hospital, New Orleans, succeeding Dr. William W. Leake.

Society News.—The honorary biologic fraternity of Tulane University, Beta Mu, has outlined a series of six lectures beginning November 7 and ending May 14. The first was by Henry Laurens, Ph.D., professor of physiology at Tulane University School of Medicine, on "Relation of Light to Human Health." The next will be, December 5, by Ernest C. Faust, Ph.D., of the department of tropical medicine on "Adaptation to Parasitic Life in the Animal Kingdom." Members of the Louisiana State Medical Society are invited to become associate members of this fraternity if interested in this series of lectures. Inquiries may be addressed to Waldo L. Treuting, department of zoology, Tulane University, New Orleans.

Six Generations of Physicians.—In connection with the recent items in THE JOURNAL concerning three generations of physicians, Dr. John H. Musser, professor of medicine, Tulane University of Louisiana School of Medicine, New Orleans, writes that his father told him that he had in his possession a patent issued by William Penn giving to the first Musser to settle in this country early in the eighteenth century a grant of land with the privilege of practicing medicine in Lancaster County, Pa. Dr. Musser was unable to find this among his father's papers after his death. However, exclusive of this member, the Musser family has provided six physicians in direct descent. Dr. Musser sends a quotation from an obituary address delivered before the Lancaster City and County Medical Society, Sept. 5, 1883, by Dr. H. B. Stehman, which follows:

> Benjamin Musser, M.D., the subject of this sketch, came from a long line of physicians, he being of the fourth generation. Dr. Musser was the son of Dr. Martin Musser, who formerly practiced at Lampeter, and the brother of Dr. Jacob Musser, who enjoyed a large practice in the county; of Dr. Martin Musser, who followed the profession in Cumberland County; of Henry Musser, a farmer but the father of two prominent physicians, and of Daniel Musser.

The Benjamin Musser in this obituary notice had one son, John H. Musser, M.D., who in turn had one son, John H. Musser, Jr., M.D. Dr. Martin Musser, the father of the Dr. Benjamin Musser of the biographic note just quoted, was the son of Dr. Benjamin Musser, who had two other sons, Dr. Joseph Musser and Benjamin Musser, Jr., who, while not a physician, had two sons, both of whom were physicians.

MARYLAND

Dr. Thayer Honored.—Dr. William S. Thayer, professor emeritus of medicine, Johns Hopkins University School of Medicine, Baltimore, and President of the American Medical Association, has been awarded the degree of doctor honoris causa of the University of Paris. Dr. Thayer was already an officer of the French Legion of Honor.

Personal.—Dr. William H. Welch, Baltimore, addressed the University Club, November 2, on "Impressions of a Trip to Europe." Dr. Welch made an extended trip in the interests of the medical library at Johns Hopkins University, which is named in his honor and of which he is the head.——Dr. C. F. Moriarty has been appointed deputy state health officer for Worcester and Somerset counties.——Dr. Harry H. Haggart, formerly on the resident staff of Johns Hopkins University Hospital, Baltimore, has become affiliated with the Mithoefer Hospital, Cincinnati, Ohio.

Society News.—Dr. Thomas McCrae will be the principal speaker at the annual meeting of the Baltimore City Medical Society, December 7.——Dr. Harold L. Amoss, Baltimore, addressed the Prince George County Medical Society, Washington, October 10, on poliomyelitis.——The Cumberland Valley Medical Association held a symposium, September 28, at Hagerstown, on blood pressure, at which time all members were requested to bring their blood pressure instruments.——The Baltimore City Medical Society was addressed, November 16, among other speakers, by Dr. Howard E. Ashbury on "Recurrent Massive Collapse of the Lung Due to a Benign Intrabronchial Tumor," and Dr. Arthur C. Tiemeyer on "Acute Surgical Abdomen Complicating Pregnancy."——The Osler Historical Club, which has been rechristened the Book and Journal Club, will hold its first meeting, November 27, at the Medical and Chirurgical Faculty of Maryland for the presentation of papers on the history of medicine. This club was founded by Dr. William Osler in 1896.

MICHIGAN

Charity in Michigan Hospitals.—The committee appointed two years ago by the house of delegates of the Michigan State Medical Society to study medical charity in Michigan has made its final report. Part I deals with community hospitals and part II with the University Hospital. After a comprehensive study, the committee reached, among others, the following conclusions with regard to the financing of community hospitals: 1. The cost of interns' maintenance seems a proper one for the patient to bear, but any extraordinary educational expense may well be placed elsewhere. 2. Patients now bear practically all of the cost of the training school for nurses, and a part of this burden at least should fall on other shoulders. The special nurse is one of the major expenses of hospital illness and the nursing school should seek to relieve patients as far as possible from the burden of the "special." 3. The original cost of buildings and additions and other capital expenditures for a hospital should be provided from outside sources. 4. Outpatient department costs, if carried at less than maintenance, should not be a general hospital burden to be borne by the patients. The committee believes that it is sound economics for the patient to pay the cost of the particular accommodations that he occupies and his extras, and that patients in better accommodations should not pay any part of the way of those in simpler ones. In the last analysis, the judgment of the physician as to whether the patient is entitled to the charity or part charity that is contemplated should be paramount in the decision, and both the hospital and the profession should recognize his right to make an adverse decision; it is his duty, however, to go over all the data pertaining to the patient's finances before passing hasty judgment. The report on the University Hospital is about four times as long as that on the subject of community hospitals. It takes up the eight different groups of university hospital patients: (1) state patients; (2) county patients; (3) students in attendance at the university or the state normal school at Ypsilanti; (4) persons bringing a letter from their regular medical attendant recommending their admission; (5) persons who can truthfully sign an affidavit that they are unable to pay the minimum fee charged by the medical profession outside the hospital; (6) patients able to pay in addition to their hospital charges fees for professional services and admitted to the service of medicine, surgery or roentgen ray; (7) physicians and the families of physicians, nurses, hospital staff and employees and (8) emergency patients. The report discusses state medicine, teaching material, the outpatient department, and each one of the eight groups of patients. The committee pays particular attention to group 6. There was difficulty in the way of the medical school or hospital assuming the extra burden made necessary by the increased salaries of physicians giving full-time service, and as an expedient the plan was adopted about seven years ago to receive patients into the University Hospital who were frankly able to pay for professional attendance and to charge them a fee commensurate with their ability to pay. The comparative isolation of this group of patients in private rooms makes their general use as clinical material somewhat difficult, although they are available for teaching purposes. Their value as clinical material the committee believes is negligible. The main reason for accepting these patients is plainly one of income, and about 25 per cent of the total amount devoted to the professional salaries of clinical teachers by the medical school and the hospital is derived from private patients. The committee believes that it is essential that a teacher should maintain contact with patients in actual private practice and that this cannot find its best expression in the full-time plan.

> Experience seems to demonstrate that the question of "full-time" is not the essential element—it is the individual. It has not worked out satisfactorily at Ann Arbor, and many who were in favor of it before its adoption are now lukewarm or opposed to it in its present form. . . . This is state medicine for the sake of education, but nevertheless state medicine, and there seems to be no sufficient reason for it. If the university medical school and hospital, to which we look for the high standards, not only in scientific medicine, but as well in medical social ethics, are receptive to such practice, into what depths of unsoundness may not the rest of us be induced to dip?

The committee suggests that this practice be annulled, if not at once at least gradually. The committee comprised Drs. Richard R. Smith, Grand Rapids; John Walter Vaughan, Detroit, and William H. Marshall, Flint. The report was adopted by the house of delegates in September.

MISSISSIPPI

Hospital News.—Two brothers, Drs. Richard J. Field and Samuel E. Field, have opened a twenty-eight bed private hospital at Centreville in a new two story fireproof building, with laboratory and roentgen-ray service and a nurses' training school.

Who Can This Be?—The surgeon general, U. S. Public Health Service, reports that a man claiming to be a physician in the employ of the U. S. Public Health Service has lectured on tuberculosis at several schools in Mississippi. An agent of the public health service engaged in rural sanitation work in Mississippi was unable to find out much about the lectures, but while he was trying to do so the lecturer "jumped his board bill at Ocean Springs and left town." He is said to have claimed to be Dr. Carroll Peterson of Jackson and Sherman avenues, Chicago, of whom these headquarters have no record whatever. He received mail from Hammond, Ind., addressed to C. M. Tripp. He was at least 6 feet tall, about 40 years of age, and weighed about 180 pounds; he had brown hair, the front half of his head being bald, and blue eyes. The public health service, with whom he has no connection, was unable to ascertain his purpose, except that he seemed to be trying to locate patients with tuberculosis.

MISSOURI

Personal.—Dr. Lucius R. Wilson, formerly assistant to the superintendent of Barnes Hospital, St. Louis, has been appointed superintendent of the John Sealy Hospital, Galveston, Texas. ——Dr. Frederick A. Jostes has resigned as orthopedic surgeon and director of the Missouri State Crippled Children's Service at Columbia.

Hospital News.—The Jewish Hospital on Kingshighway has received a gift of $200,000 to erect a clinic building, which will be known as the Waldheim Health Clinic in honor of the donors, Mr. and Mrs. Waldheim. It will be five stories high, the first three of which will be the dispensary and the upper two the laboratory. The clinic will be connected with the main hospital by a bridge.——The Alexian Brothers' Hospital, 3933 South Broadway, St. Louis, which is affiliated with the St. Louis University School of Medicine, has organized a training school for male nurses. This hospital cares for male patients only.

Society News.—The St. Louis Medical Society was addressed, October 30, by Dr. James Archer O'Reilly on "Arthritis and Orthopedic Surgery"; by Dr. Joseph Edgar Stewart on "Fractures of the Os Calcis," and by Dr. Le Roy Sante on roentgenographic consideration of gunshot and stab wounds of the chest.——The Trudeau Club of St. Louis met at the county medical society building, 3839 Lindell Boulevard, November 1, and was addressed by Dr. Harry C. Ballon, Montreal, on "Clinical and Experimental Experiences with Iodized Oil."——The pathology department of Washington University School of Medicine, St. Louis, gave the November 13 program before the St. Louis Medical Society.

NEW YORK

Diphtheria Rises Again in Buffalo.—Since the epidemic of 1920 when 298 persons in Buffalo died of diphtheria, the death rate from diphtheria in Buffalo has been decreasing. The best year since that time was 1926, when there were twenty-nine deaths. In the following year, the number of deaths was fifty-eight and the number for the present year surpasses that for a similar period in 1927. The Buffalo health department since the outbreak of 1919 has used every avenue of publicity to acquaint the citizens of the danger. In 1926 and again in 1928 it undertook an intensive campaign in cooperation with the New York State Department of Health to eradicate diphtheria. A large number of children yet remain to be immunized with toxin-antitoxin. In the last three years, about 40,000 children have been immunized in Buffalo—about one third of the child population. Most of this work has been done by the health department, but the practicing physicians have endorsed the work and most of them have promised to help. Physicians are again requested by the city health department to urge this protection against diphtheria. They are able to reach a certain group which no other agency seems able to reach.

New York City

Professor d'Herelle to Give Second Harvey Lecture.—The second Harvey lecture will be given at the New York Academy of Medicine, Fifth Avenue and One Hundred and Third Street, November 24, by Dr. F. d'Herelle, who recently was made professor of bacteriology at Yale University Medical School, on "The Nature of Ultraviruses." Dr. d'Herelle was until recently Directeur du Service bactériologique du Conseil Sanitaire, Maritime et Quarantenaire d'Egypte, Alexandria, Egypt, and is best known for his discovery of the bacteriophage.

Dinner to Sir Squire Sprigge.—Before the special meeting of the Medical Society of the County of Kings, Brooklyn, November 15, a dinner was given in honor of Sir Samuel Squire Sprigge, London, who for many years has been editor of the *Lancet*. Among the speakers were Drs. Thurston S. Welton, Brooklyn, editor, *American Journal of Surgery*, whose subject was "Modern Journalism," and Lewis S. Pilcher, Brooklyn, editor, *Annals of Surgery*, whose subject was "Medical Journalism in Its Beginning." Sir Squire addressed the society on "Medical Journalism and Professional Progress." Invitations were extended to guests in other cities.

Annual Conference on Child Study.—The Child Study Association of America will hold its fortieth annual conference at the Hotel Pennsylvania, November 20. Among the speakers will be Everett D. Martin, director, People's Institute; Helen T. Woolley, LL.D., director, Institute of Child Welfare Research, Teachers College, Columbia University, on "Changes in the Status and Attitudes of Children"; Ernest R. Groves of the University of North Carolina, "Changes in the Status and Attitudes of Youth," and Mrs. S. M. Gruenberg, director, Child Study Association of America, "Changes in the Status and Attitudes of Parents." A dinner will be held in honor of the president of the association, Mrs. Howard S. Gans. Among those who will speak at the dinner will be Felix Adler, Ph.D., Dr. Bernard Glueck and Edward L. Thorndike, LL.D.

Society News.—The International Spanish Speaking Association of Physicians, Dentists and Pharmacists, of which Dr. Jacob M. Gershberg, 48 West Eighty-Third Street, is president for the ensuing year, has organized a ladies' auxiliary and taken the first steps in the organization of a Spanish speaking hospital.——Dr. John Shelton Horsley, Richmond, Va., will address the Medical Society of the County of Kings, November 20, on "Influence of Physiologic Research on Modern Surgery," and Dr. Horst Oertel, Montreal, on "Cellular Pathology and the Principle of Causality."——Drs. Alexis Carrel and Albert H. Ebeling gave a moving picture demonstration of the malignant cell at a public meeting sponsored by the American Society for the Control of Cancer at the New York Academy of Medicine, November 13. Other speakers were Drs. Francis C. Wood and George E. Brewer.

Information for the Press.—The New York Academy of Medicine and the Medical Society of the County of New York have established a joint medical information bureau, the object of which is to disseminate authentic information on medical matters, to curtail quackery and to promote better understanding between the public and organized medicine. The bureau is supervised by a committee representing both the academy and the county society and is served by more than 100 consultants competent to give expert opinion. The bureau's first obligation, the announcement states, is to serve the press of New York and it has been organized to facilitate that service. The bureau requests that every organization concerned with the dissemination of information to the public will call on it freely for the assistance it is ready to give. The address of the bureau is 2 East One Hundred and Third Street, New York, in the academy of medicine building, telephone Atwater 4700.

NORTH DAKOTA

Personal.—Dr. John H. Rindlaub, a past president of the North Dakota State Medical Association who practiced in Fargo for about thirty years, has gone to Pasadena, Calif., to reside. He leaves, the *Journal-Lancet* says, with the good will and esteem of the entire medical profession of North Dakota. Dr. Rindlaub was given a farewell dinner by the Cass County Medical Society.

OHIO

Three Generations of Physicians.—Dr. George T. Harding, 3rd, writes from Worthington that his grandfather, Dr. George Tryon Harding, Sr., is still in practice, and that his father, Dr. George Tryon Harding, Jr., is physician to a sanatorium which he established at Worthington, with which our correspondent is associated. The three generations in this case are of the same name.

Basic Science Laws Interfere with Reciprocity.—In some states, interference with reciprocity is beginning to be noted on account of the enactment of the basic science laws. Graduates of class A medical schools who have passed their state board examinations and obtained licenses in their own state have encountered difficulty, delay and expense in securing licensure through reciprocity in states where basic science laws

exist, even though the educational requirements in the latter state are not as high as in the state of original licensure. In view of this situation, the Ohio State Medical Board adopted in October a resolution that it regards such additional examination requirements in violation of the letter and spirit of reciprocity and that it "hereby abrogates all such agreements." The secretary of the board was directed to advise all boards of licensure of this action. The Ohio State Medical Board feels justified in demanding of other state licensing authorities equal legal rights and privileges for medical graduates licensed in Ohio who desire to remove to other states.

Society News.—A series of lectures was given by the Second Councilor District Medical Society, September 24-28, at Dayton. The speakers were, among other, Drs. Stewart R. Roberts, Atlanta, Ga., and John B. Youmans, Nashville, Tenn.; George H. Semken, New York; Joshua E. Sweet, New York, and Shelby W. Wishart, Ann Arbor, Mich. The exhibit on tularemia, which was awarded a medal at the Minneapolis session of the American Medical Association, was demonstrated by Dr. Walter H. Simpson. Dr. Martin H. Fischer, Cincinnati, gave six lectures on medicine. Dr. Paul D. Espey, Xenia, was elected president for the ensuing year.——The Fifth Councilor District Medical Society met in September in Cleveland; among others, Dr. Harold N. Cole, Cleveland, read a paper on "Idiopathic-Hemorrhagic Sarcoma of Kaposi"; Dr. Roscoe D. Leas, Cleveland, "Lung Abscess in Diabetes; Treatment with Arsphenamine Resulting in Healing of Large Cavity." The evening session was attended by about 250 persons at the Allen Memorial Medical Library.—The Seventh Councilor District Medical Society met at New Philadelphia, recently, and was addressed by Dr. Eugene F. McCampbell, Columbus, on "Coronary Occlusion" and by Dr. Frank W. Harrah, New York, on "Importance of a Complete Urologic Examination in Cases of Vague Abdominal Symptoms."

Declaration of Policy on Political Matters.—At the October meeting of the council of the Ohio State Medical Association, Columbus, the chairman, Dr. John H. J. Upham, submitted a declaration of policy for the consideration of the council pertaining to the relation of the medical profession to governmental administration, legislation and so-called political affairs. The council adopted the declaration, which read as follows:

In view of the numerous and rapid social, economic and political developments affecting medical practice and public health, it is important that the medical profession take a direct interest in public affairs, including legislation and governmental administration. Physicians, as leading citizens in their respective communities, should participate in civic and political activities. Medical organizations as such, however, must never become involved in political controversies or with political candidates.

The policy committee and the headquarters of the state association should continue to record and announce to the membership, through the legislative committeemen in the county medical societies, the records of legislators and other public officials. Such information is important and should be borne in mind. Neither county medical societies, academies of medicine nor the state association, however, should *officially* endorse, oppose or promote the candidacies of those seeking public office. Individual physicians not only have a perfect right, but in some cases a public duty to participate in and express themselves upon such public questions. Members of medical societies can with propriety discuss such questions and the members as individuals may properly act as their judgment indicates.

The foregoing declaration of policy is recommended for adoption by the council in view of the fact that one or more county medical societies in recent months have issued circulars and communications to the profession officially endorsing or opposing political candidates. This, we believe, to be improper and ill advised. Opposition to that sort of official activity, however, is in no sense a criticism of or objection to similar activities by physicians as individual citizens and voters or as members of other organizations of a political character.

OKLAHOMA

Society News.—The Okmulgee-Okfuskee County Medical Society met at Okemah, October 8; Drs. Millington Smith and Everett S. Lain, Oklahoma City, spoke on "Cancer of the Cervix" and "External Markings of Drug Reactions," respectively. This society was addressed by Dr. George Osborn, Tulsa, on "Cesarean Section" and Dr. Calvin E. Bradley, Tulsa, on "Scarlet Fever."——The Oklahoma State Hospital Association will hold its annual meeting, November 22-23, in Muskogee. The guest of honor will be Dr. Malcolm T. MacEachern, Chicago.

PENNSYLVANIA

Society News.—The University of Pittsburgh School of Medicine started extramural instruction this fall; each senior student is assigned for six weeks to work with approved practitioners, most of whom are located in western Pennsylvania. This plan of assigning students to preceptors to teach them the art of medicine has been taken up in several medical schools recently.——The Allegheny County Medical Society will conduct a symposium on cancer, November 23, at Carnegie Lecture Hall, Pittsburgh.——The Dauphin County Medical Society was addressed, November 6, at Harrisburg, by Drs. Jesse L. Lenker and Harvey F. Smith on the medical and surgical treatment of goiter.——Dr. Carson Coover returned the check for $500 presented to him by the Harrisburg Academy of Medicine at the last annual meeting as winner of the Seibert Memorial Fund. The check will be transferred to the book fund as called for in the deed of trust. The academy will meet, November 20, at the Penn-Harris Hotel, Harrisburg, where Drs. John O. Polak, Brooklyn, will discuss "Uterine Bleeding: Pathologic Significance and Treatment."——The Fayette County Medical Society held its annual fall clinic at the Uniontown Hospital, November 15. The clinical program was presented by Drs. Eldridge L. Eliason, Oliver H. Perry Pepper and Henry K. Pancoast, Philadelphia. At the banquet session the speaker was Mr. Albert Kennedy Rowswell, "reader-humorist-philosopher."——The Pittsburgh Academy of Medicine held a symposium on pediatrics, November 13; Drs. Harold A. Miller spoke on "Effects on Infants of Liver Extract Treatment in Toxemias of Pregnancy"; Evan W. Meredith, "Splenectomy Followed by Compensatory Regeneration of Mesenteric Lymph Glands"; Henry T. Price, "Dextrocardia"; James K. Everhart, "Biliary Cirrhosis of Liver in an Infant of One Year"; David H. Boyd, "Acute Rheumatism with Unusual Blood Findings"; John H. Wagner, "Case of Infantile Obesity Due to Posterior Pituitary and Thyroid Deficiency," and Charles H. Marcy, "Bronchiectasis in Infants."

Philadelphia

Society News.—The Philadelphia Alumni Society of the medical department of the University of Pennsylvania will hold a smoker, November 17, at Kugler's Restaurant, 30 South Fifteenth Street; the superintendent of the state police force, Major Lynn G. Adams, will give an illustrated lecture on "The Training of a Policeman."——Dr. Ralph Pemberton addressed the Northwestern Ohio District Medical Association at Lima, Ohio, October 9, on "The Control of Arthritis and Rheumatism."——Dr. Paschal F. Lucchesi has been appointed chief resident physician of the Philadelphia Hospital for Contagious Diseases, Front and Luzerne streets, by the director of the department of public health, Dr. Andrew A. Cairns, succeeding Dr. Clarence W. Bailey, resigned.——The cornerstone of the new ten story Mount Sinai Hospital was laid, October 7.

Alvarenga Prize Awarded.—The College of Physicians of Philadelphia announces that the Alvarenga prize for 1928, amounting to about $300, has been awarded to Drs. J. R. Paul and William U. McClenahan of Philadelphia for their essay on "A Pathologic Study of the Pleural and Pulmonary Lesions in Rheumatic Fever." This prize is provided from the income of a bequest by the late Señor Alvarenga, and the next award will be made July 14, 1929. Essays must be received by the secretary of the college, 19 South Twenty-Second Street, Philadelphia, before May 1, 1929, each one to be sent without signature but marked with a motto and accompanied by a sealed envelop containing the motto on the outside and within the name and address of the author. The essay may be written on any subject in medicine but must be accompanied by a certificate stating that it has not appeared previously in print and has not been presented elsewhere in competition.

VERMONT

State Medical Election.—At the annual meeting of the Vermont State Medical Society, Burlington, October 11-12, Dr. Charles F. Dalton, Burlington, was elected president; Dr. George R. Anderson, Brattleboro, vice president; Dr. William G. Ricker, St. Johnsburg, secretary, and Dr. David Marvin, Essex Junction, treasurer.

Decrease in Death Rate.—The U. S. Department of Commerce announces that the death rate in Vermont for 1927 was 1,385 per hundred thousand of population, as compared with 1,480 in 1926. The decrease is largely accounted for by decreases in the rates for pneumonia, influenza, nephritis, tuberculosis, heart disease and scarlet fever. There were increases, however, in the death rates from measles, diabetes, whooping cough and accidental drowning.

WEST VIRGINIA

Decrease in Death Rate.—The death rate for West Virginia for 1927, according to the U. S. Department of Commerce, was 1,002 per hundred thousand of population, as compared with 1,087 in the previous year. The decrease was due largely to fewer deaths from influenza, pneumonia, enteritis, measles, typhoid and tuberculosis. There were increases, how-

ever, during 1927 in the death rates from cancer, whooping cough, and automobile and mine accidents.

Society News.—The third annual meeting of the Hospital Association of West Virginia will be held in Charleston, December 3; Matthew O. Foley, editor of *Hospital Management*, Dr. Charles E. Holzer, Gallipolis, Ohio, and C. L. Haeberlin, workmen's compensation commissioner of West Virginia, are on the program.——A drive to raise $350,000 for the Wheeling Hospital, Wheeling, was instituted, October 26. More than 1,200 citizens attended the banquet.——The offices of the West Virginia State Medical Association will be moved about December 1 to the public library building at Charleston. The new location, which is much larger than the present one, will enable the association to conduct a reading and package library in connection with its general offices.——The Raleigh and Mercer county medical societies held a joint meeting at Princeton recently following a banquet and entertainment. Among others, Dr. Adrian H. Grigg, Beckley, read a paper on "Peptic Ulcer," and Dr. Azby A. Milburn, Beckley, on diagnosis and treatment of toxic goiter.——Dr. William M. Sheppe, Wheeling, addressed the Lewis County Medical Society, Weston, October 9, on "Bronchial Asthma."——The Greenbrier Valley Medical Society met at Ronceverte, recently, and was addressed, among others, by Dr. Ashby D. Ferrell on "Cardiospasm."——Drs. Joseph A. Guthrie and Byford H. Denman, Huntington, addressed the Cabell County Medical Society recently on "Spinal Anesthesia."——Dr. Charles F. Fisher, for about five years a member of the McClung Hospital, Richwood, has resigned and will move to Kokomo, Ind., to engage in practice.——Governor Gore gave the address at the placing of the cornerstone of the Rutherford State Hospital at Beckley, October 13, which will be for the care of tuberculous patients, and will have a capacity of 125 beds and cost about $185,000.

WISCONSIN

Decrease in Death Rate.—The death rate in Wisconsin for 1927 was 1,013 per hundred thousand of population as compared with 1,047 in the previous year, according to the U. S. Department of Commerce. The principal decreases were in the death rates from influenza, pneumonia, whooping cough and tuberculosis. The principal increases during the year were in the rates from heart disease, automobile accidents and diabetes mellitus.

Another Separate Department of Pediatrics.—Marquette University School of Medicine, Milwaukee, has organized a separate department of pediatrics with Drs. Mynie G. Peterman, professor and head of the department; Abraham B. Schwartz, clinical professor; Alfred L. Kastner, associate professor; Karl E. Kassowitz, assistant professor; Samuel H. Lippitt, assistant clinical professor; Henry O. McMahon, assistant clinical professor; George F. Kelly, instructor; Francis R. Janney, instructor, and Samuel E. Kohn, assistant.

Society News.—The Green Bay Academy of Medicine was addressed, October 10, by Dr. Carl E. Stubenvoll, Shawano, on "Surgical Treatment of Septic Peritonitis"; the academy was addressed, September 19, by Dr. Earl A. Linger, Oconto, on "Newer X-Ray Diagnosis of Gallbladder Conditions."——The University of Wisconsin Medical Society was addressed, October 25, by Dr. William D. Stovall, Madison, on "Bronchomycosis" and by Dr. Ralph M. Waters on "Spinal Anesthesia."——Lieut. Col. Fielding H. Garrison, U. S. Army Medical Corps, Washington, D. C., addressed the University of Wisconsin Medical Society, November 9, at Madison, on "Medicine as an Agency of Civilization."——Col. Bailey K. Ashford, U. S. Army, retired, addressed the University of Wisconsin Medical Society, Madison, the afternoon of November 16, on "Sprue and the Relation of Its Anemia to Pernicious Anemia." Prof. F. d'Herelle of Yale University School of Medicine, New Haven, Conn., addressed the society in conjunction with Sigma Xi in the evening on "Nature of the Bacteriophage." Both lectures were open to the public.——Dr. Oscar P. Schnetzky has been appointed health officer of Princeton.

WYOMING

State Medical Election.—At the recent meeting of the Wyoming State Medical Society, Dr. Frank A. Mills, Powell, was made president; Dr. John L. Linn, Lander, president elect; Dr. Charles W. Jeffrey, Rawlings, first vice president; Dr. Evald Olson, Lovell, treasurer, and Dr. Earl Whedon, Sheridan, secretary, reelected. The 1929 meeting of the association will be at Casper, June 24-25.

GENERAL

Prescription Books Require First Class Postage.—Physicians' official prescription books for liquor, containing stubs filled out in writing, must be prepaid as first class postage when mailed to federal prohibition administrators. In some cases postmasters have accepted such books prepaid at the third or fourth class rate, and federal prohibition administrators to whom they were addressed have refused to receive them because of the postage due when they were presented at the administrators' offices. Such refusal results in the return of the books to the postoffice whence mailed, where they are delivered to the sender on payment of the postage due. This causes unnecessary trouble and delay to the physician, to the postoffice, and to prohibition administrators.

Schools for the Deaf.—There are eighty-three schools for the deaf which are parts of city school systems, sixty-nine schools for the deaf supported by the state, and sixteen under private control included in the statistics of such schools for 1926-1927 prepared by the bureau of education of the U. S. Department of the Interior. Seventeen of these schools have departments for blind children also. In the schools under state control there were 1,724 instructors, in the city schools, 417, and in the private schools, 162, a total of 2,303, which is an increase of about 21 per cent over the number of instructors reported in 1922. The schools that prepare teachers for the deaf are Gallaudet College, Washington, D. C.; Clarke School for the Deaf, Northampton, Mass.; Central Institute for the Deaf, St. Louis; School for the Deaf, 104 Lexington Avenue, New York, and School for the Deaf, Morganton, N. C. In the state schools there were 13,134 pupils, in the city schools, 3,515, and in the private schools, 933, a total enrolment of 17,582, or an increase of 22 per cent over 1922.

Another Physician Wins Income Tax Appeal.—The U. S. Board of Tax Appeals at Washington has again decided that the expenses incurred and paid by a physician in attending medical associations, as well as others relating to trips for consultation work, should be allowed as deductions in computing federal income taxes. This decision was promulgated on October 25 in the case of Dr. J. Bentley Squier of 8 East Sixty-Eighth Street, New York City, who appealed from a ruling of the commissioner of internal revenue wherein the latter has refused to allow the deduction of such expenses. The record in the case shows that Dr. Squier incurred expenditures during the year 1921 while attending consultations in other states and meetings of the American College of Surgeons which totaled $429.18; that he is a member of the executive committee and is a regent of that organization. In deciding the appeal in favor of Dr. Squier, the board of tax appeals cites the case of Dr. Cecil M. Jack, Decatur, Ill., v. Commissioner (13 B. T. A., 726) decided by the board of tax appeals, October 2, as authority for its decision in the present case.

Society News.—The American Electrotherapeutic Association has concluded the purchase of *Physical Therapeutics* from its former owner and editor, Dr. William B. Snow, New York, who has conducted it for about twenty-five years. The association plans to enlarge the journal and has appointed an editorial board comprising Drs. A. Bern Hirsh, Fred deKraft, Richard Kovacs, William B. Snow, Cadwallader C. Vinton and Frank T. Woodbury.——The Pan American Medical Association will hold its next congress in Havana, Cuba, Dec. 29, 1928-Jan. 3, 1929. This association is organizing chapters in various centers of North and Central America and in the Antilles, all of which will be represented at the congress. The association has recently established in New York the Pan-American Hospital for the benefit of Latin speaking peoples. Dr. William J. Mayo, Rochester, Minn., will give the oration in surgery at the Havana congress and Dr. Lewellys F. Barker, Baltimore, the oration in medicine. Papers will be read in both Spanish and English.——The next meeting of the Pacific Coast Surgical Association will be on Feb. 22-23, 1929, at Catalina Island, Calif.

Ringworm Attacks Large Part of Population.—In recent years a large part of the population of the United States has suffered from an eruption on the hands and feet which in a great many instances is an infection with a ringworm parasite. It is, however, a ringless ringworm. The U. S. Public Health Service says that probably half of all adults have had this condition at some time. In the Gulf states almost the entire population has had the disease. Almost every one who uses public swimming pools, golf clubs, athletic clubs, or places where there is a common dressing room, gets the infection on his feet. The tendency of people to spend their spare time in clubs and

similar public places is responsible for the increase in this disease. It is usually acquired on the feet from floors of shower baths but may originate in hotels from the use of towels or soap. In its mild form, ringworm manifests itself by a cracking or scaling between the toes, as blisters, a scaly eruption or wartlike growths. Fluid escapes when the blisters break and usually a scab forms. Itching is sometimes intense. Pus may develop in these areas; rarely abscesses form. The disease is by no means always mild. It has been known to disable patients for three months. The organisms exist deep in the skin and are difficult there to kill. One attack does not protect against another. All cases can be improved temporarily, and about 50 per cent, the public health service says, can be cured. A person infected with ringworm should be scrupulous about having his own towels, soap, socks, slippers and shoes. A good plan for persons who frequent club rooms or hotels would be to have simple wooden slippers to keep their feet entirely off the floor. A person in the active stage of ringworm should sleep alone, should not dance with lesions on his hands, nor hold to street car straps or in any way make it possible for others to contract his disease. Almost every known antiseptic has been employed to treat the disease, but none has met with universal commendation. There is no type of serum which has the slightest effect.

Rosenwald Fund to Take Up Medical Service for Middle Class.—Extension of the activities of the Julius Rosenwald Fund, heretofore chiefly concerned with building negro rural schools to include support of medical services to people of moderate means, is the basis of an announcement made by Edwin R. Embree, president of the Julius Rosenwald Fund of Chicago. Michael M. Davis, Ph.D., has been appointed to the executive staff of the fund as director for medical services. As executive officer of the committee on dispensary development, he was responsible for the organization of the pay clinic in New York City of the Cornell University Medical College. During the past few years he has been engaged in private work as consultant to various organizations. He will direct the program which the fund is planning to undertake in cooperation with the medical profession to improve the organized facilities for medical service to the average man. In these activities special attention will be given to pay clinics. William B. Harrell, now assistant auditor of the University of Chicago, has been appointed secretary and comptroller of the Julius Rosenwald Fund. Born and educated in the South, Mr. Harrell has the degrees of B.A. and M.A. from the University of North Carolina. He has been instructor in economics and a member of the business offices of the universities of North Carolina and Chicago. Clark Foreman, a graduate of the University of Georgia, who is now with the Phelps-Stokes Fund of New York, has been appointed associate field agent of the Julius Rosenwald Fund for southern schools and colleges. Dr. Franklin C. McLean, chief of the medical clinics of the University of Chicago, has been elected a trustee of the Julius Rosenwald Fund. Commenting on the new work which Dr. Davis is to direct, Mr. Embree, the president of the fund, said:

> Great loss in human welfare and happiness and in economic efficiency is caused by sickness, much of which can be cured or prevented by modern medicine. While the brilliant achievements of medical science are among the triumphs of the century, the full benefits of recent discoveries and present knowledge do not yet reach the average man. As Dr. William H. Welch, dean of American medicine, puts it: "The health field has a woefully ineffective distribution service as compared with its enormously effective production service." It is common knowledge that people of moderate means find it harder to get good modern facilities for diagnosis and treatment of illness than do the poor and indigent through charity services and free hospitals. The Julius Rosenwald Fund is planning to study and from time to time to give practical aid to clinics and other organized medical services, including pay clinics.

CORRECTION

"Chronic Ulcerative Colitis."—Dr. H. W. Soper, St. Louis, disclaims the discussion accredited to him of Dr. Bargen's paper on Chronic Ulcerative Colitis which was published in THE JOURNAL, October 20, p. 1180. He says: "As near as I can recall, I said that laboratory studies in our cases of ulcerative colitis have convinced me that the Bargen organism is the etiologic factor in ulcerative colitis. The fact that the organism is frequently found in the submucosa probably accounts for the frequent relapses seen in these cases. In many of our patients a striking improvement followed the use of his sensitized vaccine, which he kindly supplied to us. In addition to the vaccine, I believe that much can be done locally by topical applications through the proctoscope. Dr. Larimore's high vitamin diet is of great assistance in the treatment of these cases."

Government Services

Change of Station in the Navy

Lieut. Comdr. Melville J. Aston, from submarine base, Coco Solo, C. Z., to naval hospital, League Island, Pa. Lieut. Comdr. John H. Chambers, from naval hospital, New York, to U. S. S. *Mercy*. Lieut. Comdr. Julius F. Neuberger, from naval hospital, New York, to second brigade, U. S. Marines, Nicaragua. Lieut. Lloyd L. Edmisten, from navy yard, Norfolk, to U. S. S. *Kanawha*. Lieut. Comdr. Edgar F. McCall, from U. S. S. *Kanawha* to naval hospital, San Diego, Calif. Capt. James P. Haynes, from naval medical supply depot, Brooklyn, to naval hospital, League Island, Pa. Capt. Ralph W. Plummer, from naval hospital, League Island, Pa., to marine recruiting station, Philadelphia. Lieut. Comdr. Albert G. Wenzell, on expiration of sick leave, to navy recruiting station, Portland, Ore.

The surgeon general of the navy has recommended the transfer of Lieut. Comdr. George C. Rhoades from Pensacola, Fla., to the staff of the commander aircraft squadrons, scouting fleet; of Lieut. Comdr. George A. Eckert from naval hospital, League Island, Pa., to U. S. S. *Mercy*, and of Comdr. Walter C. Espach to naval hospital, Great Lakes, Ill.; Lieut. Comdr. Carl J. Robertson from naval hospital, New York, to the U. S. S. *Mercy;* Lieut. Comdr. William W. Davies from naval air station, Anacostia, D. C., to the aircraft squadrons, scouting fleet; Capt. Charles M. Oman from naval medical school to duty in command of the U. S. Naval Dispensary, Washington, D. C., as the relief of Rear Admiral Cary T. Grayson, retired.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 20, 1928.

Government Report on Silicosis

In 1923 the government appointed a departmental committee on compensation for silicosis, which has now made a report. In 1925 a medical inquiry showed a great deal of silicosis in the pottery industry. It had been urged by employers that the regulations under the factory act had so improved conditions that the risk of silicosis was considerably diminished. On the other hand, Dr. Bridge, senior medical inspector of factories, told the committee that there had been little or no diminution in the mortality of the disease. Agreeing that the workman or his dependents should in case of death or disablement be entitled to compensation, as provided in the workmen's compensation act, the committee has not found it easy to frame a scheme acceptable to the industry. There are at present only two schemes in operation—those for the refractory industries (ganister mines and quarries, and factories engaged in the manufacture of silica bricks and similar articles for lining furnaces) and for the metal grinding industries—while the draft of a scheme for the pottery industry is in preparation. There are other industries with risk of silicosis, of which evidence is continually being brought to the notice of the government. A notable instance was the death from silicosis of two workmen employed in the manufacture of a scouring powder containing a high percentage of silica. It was anticipated by the home office that it would be possible to negotiate with each industry a scheme following the lines of the refractory industries scheme with adaptations to the particular circumstances, and thus bring all the outstanding trades under the workmen's compensation act. This has not been found possible. The government has therefore determined to follow a simpler and more decisive procedure—to make a comprehensive scheme to cover all the industries other than those specified. The scheme will apply to the manufacture of china, earthenware, electrical ware or tiles; to any process in connection with the milling of flint or other material containing silica; to all processes in connection with the manufacture of pottery up to and including the preparation for glazing; and to polishing, grinding and tile-slabbing. The committee recom-

mends that the compensation provisions follow, with certain qualifications, those in the metal grinding industries scheme of 1927. Compensation therefore will not be payable unless the workman has been employed in the processes within three years before the date of disablement. The medical examinations as carried out now in the potteries are not regarded by the committee as of any value. It is recommended that workers over the age of 30 employed in the more hazardous occupations involving exposure to unmixed flint dust should be examined not less often than once a year. For those between 16 and 30 an examination for tuberculosis once every three years is recommended. Periodic examinations are recommended in certain other cases, as well as an initial examination of new workers to exclude those unsuitable. With reference to the suppression of dust, the committee makes detailed recommendations which, except as regards the processes of fettling and china biscuit emptying, do not go beyond those already in practice in some factories. They are informed that the present method of firing china ware in flint may soon be superseded. This would enable the greatest risk in the whole range of pottery processes to be eliminated.

Sir Ronald Ross to Sell His Archives

Though a considerable sum is spent on research by the government and voluntary organizations, which often bears little fruit, in utility at any rate, it seems that a man who has made a discovery, however important, cannot hope for any monetary reward after the event. Sir Ronald Ross, who thirty-one years ago proved that malaria is carried by mosquitoes and thus entered the front rank of the benefactors of humanity, has never received any monetary reward. He now proposes to sell the archives of his discovery. He hopes to receive more than $10,000 for them and already has received offers for portions of the collection but is not prepared to divide it. Yet Jenner was given $150,000 for his discovery of vaccination. In a press interview Sir Ronald gives some interesting details of how he made his great discovery. In 1897 he was in the Indian medical service and had been trying for some years to cultivate a malaria parasite in patients. August 20 he was on military duty in Secunderabad in the Dekkan and had been working all the morning in his regimental hospital in a temperature of 100 degrees. He went home exhausted by the heat and lay down. When he awoke he had the key to the problem. He found evidence under the microscope which pointed to the fact that an anopheles mosquito carried malaria germs in its stomach. It took him another year to complete his discovery. "For fifty years," he says, "I have been talking to politicians and others with the idea of getting them to take some interest in the preservation of human life. They seem to have forgotten that malaria kills more people than any other disease and that for every million it kills it renders 200 millions sick every year. It causes one third of the sickness in India. In spite of this fact, however, practically nothing has been done in the last thirty years to stamp it out." However, Sir Malcolm Watson, who was chairman of the antimalarial industrial committee for the Straits Settlement in 1911, is going to India as the guest of various rajahs, with Major Stevens of the Ross Institute, in order to give advice as to the best means of extermination. Sir Ronald is not selling his archives because he has to but simply because he wants to realize on their value for the benefit of his children. He has already had an offer from an American for his original notebook which gives an account of his epoch-making discovery. In a letter to the *Daily Mail* Sir James Barr states that Sir Ronald's position is a sad reflection on the British government and the presumably generous public. He made every sacrifice in health and pocket to save suffering humanity and has had no reward except a few empty honors which would not feed a mouse. Probably he might have had a peerage if he had been able to maintain its so-called dignity. He is now 71 and in declining health.

The Altered Character of Scarlet Fever

At the Royal Society of Medicine, Mr. T. B. Layton described two cases of osteomyelitis of the jaw in scarlet fever, which led to an important discussion. A paper in the official reports of the Metropolitan Asylums' Board (which controls all the fever hospitals of London) by H. F. Mantell was quoted. In 1897 this observer described nineteen cases of necrosis of the jaw in a series of 12,230 cases of scarlet fever. In sixteen of these there was a common factor determining the necrosis; viz., mechanical injury. The throat and mouth were, of necessity, frequently cleansed; food was given at frequent intervals. The patient actively resisted this treatment. The necrosis began in the height of the acute stage, close to the symphysis of the lower jaw. Seven of the sixteen cases were fatal. In only three was the upper jaw involved, and two of these patients recovered. In those days syringing the throat was a common method of treatment, and to do this the gag was frequently needed in a recalcitrant child.

Dr. J. D. Rolleston, medical superintendent of the Western Fever Hospital, pointed out how the character of scarlet fever had changed within the last half century. About fifty years ago, when the Metropolitan Asylums Board hospitals came into existence, the mortality from scarlet fever in London was a little over 13 per cent, just about the figure it now stood in Poland, and ever since then there had been a gradual reduction in the mortality from it, until now it was less than 1 per cent. In 1897 the mortality of scarlet fever was six times as high as now. On the other hand, when Sydenham described scarlet fever he said it was hardly worthy the name of a disease and was never fatal except through the physician's excessive diligence. The deaths in Mantell's series were examples of this kind, the necrosis of the jaw being due to mechanical injury caused by insertion of the spatula, the throat syringe, the finger or the feeder. Dr. Rolleston had been connected with fevers for more than twenty-five years but had seen very few cases of bone disease, except in connection with otologic conditions, and had never seen a case of disease of the jaws of scarlatinal origin. Little had been written on the subject.

PARIS

(From Our Regular Correspondent)

Sept. 19, 1928.

Vincent's Anticolibacillary Serum

Professor Vincent is continuing his researches on anticolibacillary serotherapy, begun in 1925, at which time he effected, by this means, a cure in a case of chronic suppurative pyelonephritis. According to Vincent, the various characters proposed for the differentiation of the different types of *Bacillus coli* (the fermentative action on sugars, and like substances) do not have much value. The only fact that counts is the power to produce enterotropic endotoxin and thermostabile neurotropic exotoxin, and that power is possessed by most types of *Bacillus coli*. The Vincent serum is obtained by the immunization of horses, and proves its efficacy in all the acute and chronic manifestations of colibacillosis, such as septicemia, abscesses of the regions adjacent to the digestive tract, infiltration of urine (in frequent association with anaerobia), suppurative pyelonephritis, and gangrenous appendicitis, in which condition *Bacillus coli* is present in enormous quantities, whereas *Bacillus perfringens* is rare. The combination of Vincent's anticolibacillary serum and Weinberg's antigangrene serum is, in gangrenous appendicitis, a valuable aid in surgical intervention and reduces the possibility of peritoneal and general infection remarkably. The Vincent serum has the same preventive action on urinary infection in operations on the urinary apparatus. In suppurative pyelonephritis, it checks the fever rapidly and clarifies the urine; the pus disappears in a few days. M. Vincent cites a number of cases in which the serum has

effected recoveries in grave cases that had been resistant to modern forms of medication: autovaccines, bacteriophage, and lavages of the bladder and the kidney pelvis with colloidal silver, and the like. The serum must not be used until *Bacillus coli* has been isolated and identified. When there exist, as is frequently the case, combinations of various micro-organisms, the colibacillus alone disappears, while the other organisms remain, but the colibacillus is always the most dangerous. The enterococcus if present does not disappear, but its effects are notably attenuated. In immunized subjects, the antibodies enter the urine only in small quantities, which explains the failure of ordinary anticolibacillary vaccinations and the existence of germ carriers. The sterilization acts on the renal parenchyma. Antiseptic lavages of the bladder and the kidney pelvis may be helpful as supplementary treatment, but they would not suffice to bring about a recovery.

The International Congress of Graphology

The second International Congress of Graphology was recently held in Paris. For the first time, the medical press took account of its proceedings, which were carried on in strictly scientific form and which were attended by well qualified psychiatrists and psychologists such as Prof. Pierre Janet, chairman; Dr. Legrain, Dr. Houzel, Dr. Streletzi, and many foreign scientists. Professor Janet established the relation existing between the ordinary handwriting of a person and the habitual psychic states—elements of individual character. He pointed out also the services that the study of handwriting renders to nervous pathology, legal medicine and judicial inquiries. Dr. Houzel described the *lettre tordue*, or twisted letter, which he thinks results from an endocrine dysequilibrium. Dr. Legrain presented a rich collection of autographs of psychopaths and persons suffering from dysequilibrium. Professor Zadek gave an ingenious demonstration of the study of handwriting by means of the retarded cinema. Madame Becker (Germany) discussed the writing of children. The congress closed with an interesting visit to the chirographic archives of the prefecture of police.

Better Housing and Better Hospital Facilities

M. Lemarchand, president of the municipal council of Paris, has stated that, with the aid of M. Loucheur, minister of labor, hygiene, public charities and social welfare, it would be possible to wage an effective campaign against squalid tenement houses.

Furthermore, the minister has interested himself in the lack of beds in the "Hôpitaux de Paris," and he is planning the construction of new hospitals on sites that have become vacant through the razing of forts of the second line of defense. He has worked out a plan that will provide 9,000 beds, and he is inclined to carry out rapidly the first part of the plan, which will comprise not less than 4,000 beds. His plan will entail the demolition of a number of centrally located hospitals that are old and insalubrious. The parks of the old hospitals will, if this plan is followed, become public garden spots. The proposals of M. Loucheur will be presented soon to the municipal council of Paris.

Backward Children and Manual Arts

Dr. J. Roubinovitch, the neurologist, has advanced an interesting opinion in the field of school medicine. He emphasizes the value of manual arts in the curriculum by reason of their favorable effects on the "mental health" of the boys and girls. Paper folding, weaving, and clay modeling are recommended for the youngest pupils, with wood and metal work, sewing, embroidery, and the like, for the older pupils. At the Institut d'Asnière, Dr. Roubinovitch noted the good effects of this method in dealing with backward children. Such children become more active; their gestures are better coordinated, and soon an improvement in mental activity is noted.

A Case Bearing on the Identity of Herpes Zoster and Chickenpox

At the crèche of the Maison départementale de la Seine, at Nanterre, MM. François Dainville and Henry Reynaud observed an important fact that strengthens the view of the pathologists who hold to the conception of Bokay that herpes zoster and chickenpox are identical. The above mentioned Maison, or home, accommodates twenty-four children. No child is admitted to the crèche until it has been subjected to a period of observation to prevent the introduction of a contagious disease. There had been no cases of chickenpox for two years. One day one of the nurses of the establishment who had not been away from it for several weeks presented typical intercostal herpes zoster, which evolved in eight days without suppuration. She continued to nurse her own daughter, aged 4 months, who had never been outside the crèche, and two weeks after the onset of herpes zoster in the mother the daughter developed a characteristic case of chickenpox. She was immediately isolated, and the disease evolved normally. Two days after the first case, other cases began to develop in the crèche, and, in all, fifteen cases developed in quick succession.

An Interpretation of the Effects of Liver Treatment

MM. Weinberg and Alexa have suggested an ingenious explanation of the mode of action of calves' liver ingested in pernicious anemia. Pernicious anemia is associated with an abundant intestinal flora, in which *Bacillus perfringens* is predominant. Injections of cultures of this bacillus have produced in animals, as reported by several experimenters, impairment of the blood distinctly comparable to that found in man in association with pernicious anemia. One is inclined, therefore, to ascribe a certain rôle to this organism in the genesis of pernicious anemia. Weinberg and Alexa studied the effects of an aqueous extract of calves' liver on *Bacillus perfringens*. The extract was found to neutralize the hemolysin produced by the bacillus, as well as that produced by other intestinal microorganisms. The effect is, however, less marked on the cultures and on the toxin of *Bacillus perfringens*. The authors explain this fact by calling attention to the different types of the bacillus, some of which produce hemolysin and the others a nonhemolytic substance. That would explain why the ingestion of calves' liver produces variable effects and why the effects are sometimes transitory. If the patient harbors chiefly a species of *Bacillus perfringens* of the hemolytic type, the action of the liver is rapid and complete. When, however, one is dealing with a species producing a nonhemolytic substance in great quantities, only transitory relief is furnished, which ceases when the ingestion of liver is interrupted. Since *Bacillus perfringens* occupies the small intestine and the large intestine, more marked effects would be secured by administering the liver extract in the form of lavages, which would bring the medicament in more immediate contact with the bacillus and would also be less repugnant to the patients.

A Martyr to Duty

The radiologist Fernand Ducretet died recently at Athis-Mons, near Paris, the victim of his duty to his profession. In 1893, when but 15 years of age, he became an assistant to his father in the construction of scientific apparatus. He later became a collaborator of the roentgenographer Vaillant. In 1914, he had already suffered an attack of radiodermatitis, but, by reason of his scientific training, was assigned to the staff of General Ferrier in the army radiotelegraphic service. He placed himself also at the disposal of the radiographic services of the "Hôpitaux de Paris." He became blind in 1917, but later recovered part of his sight. He underwent, in all, nineteen operations under general (chloroform) and twenty-five under local anesthesia. These words reflect well the character of the man: "What do my three hundred burns amount to compared with the thousands of patients that my work has saved!"

JAPAN

(From Our Regular Correspondent)

Oct. 20, 1928.

The Birth Control Problem

Birth control in this country does not seem to be so important a problem as in England and America, though the authorities have recently established consultative centers to determine to what extent it is practiced, and if there is a greater need for it. The people are rather opposed to discussing the matter openly as if it were a means of aiding loose relations between the sexes. The attitude of the lower classes toward it, however, which is often mentioned in the newspapers and magazines, demonstrates its importance to them as a social question. According to the social bureau of the Tokyo municipal office, 225 women have come to consult the physicians concerning birth control since the consultative centers were established. One hundred and twenty-two were married women, with large families, who must depend on their husbands' earnings for their living. Their husbands were employed as follows:

Lower clerks	22	Farmers	14
Lower officials	13	Laborers	13
Poor merchants	12	Teachers	11

A hundred and fourteen were proletarians, while thirty-eight were of the middle class.

Infant Consultative Centers

In an attempt to curb the rising infant mortality rate, the home ministry is to establish more local infant consultative centers provided for, in part, by a grant from the central government. According to the Japan Red Cross Society, which has fourteen consultative centers in Tokyo and other cities, 2,930 children were examined in them during the first six months of this year. Nine hundred and seventy of them were healthy, while 1,960 presented some illness or disease.

Delegate to the International Conference

Dr. Tomo-ko Inoue has been chosen as the delegate to the Fifth International Conference of Women Physicians, which is to be held in London in 1929. She was the delegate to the conference held in Bologna last April.

Cholera

In spite of all the precautions against the invasion of cholera made by the authorities and people of this country, the chief mate of an English cargo steamer was found to be ill with the disease, September 28. The steamer had touched at Shanghai on her way from London to Kobe. He remained in Kobe, at the time of the ship's departure, and shortly afterward was found to have cholera. The Kobe authorities, therefore, immediately wired the news to the Yokohama quarantine station, the ship's next port of call, and at the same time vaccinated about 15,000 people in the port against a possible epidemic. The steamer was isolated outside the harbor of Yokohama and disinfected. September 30, the captain of the ship also developed cholera, and on the next day an English ship carpenter and two Chinese cooks on board became ill with the disease. Later a case was reported in Osaka, another in Tokyo, and five in Kobe. The Osaka patient and three of the Kobe patients died, October 3.

Deaths

Dr. Toyama, director of the Tokyo Microscope Institute, died, September 1, at the age of 72. His institute was established in 1891, a year before Baron Kitasato's. A necropsy was performed by Dr. Nagayo, professor in the Tokyo Imperial University, who found the cause of death to be cancer of the lung.

Dr. Miura, professor of pediatrics in the Kyoto Medical College, died, September 30, at the age of 50. Dr. Suzuki has been chosen to succeed him.

Foreign Medical Practitioners in Japan

According to the home ministry office there are thirty-one foreign medical practitioners registered with the government: four Americans, one Englishman, four Germans and twenty-two Chinese. Seventeen of them have passed the national examination to practice medicine in this country.

BELGIUM

(From Our Regular Correspondent)

Sept. 15, 1928.

The Congress of Alienists and Neurologists

The Congrès des aliénistes et médecins neurologues was held, this year, at Antwerp. The papers to be presented and the scientific reputations of the men selected to open the discussions attracted a large number of participants.

ALGIAS OF THE UPPER LIMBS

Dr. H. Roger, professor of clinical neurology, of Marseilles, discussed the algias or pains of the upper limbs. Professor Hesnard called attention to brachial neuralgias of central origin and to peripheral neuralgias. Dr. Courboin dealt with pains in the stumps of amputated limbs and with intermittent organo-psychopathic algias of the arm. The algias of the upper limb in women with an amputated breast were considered by Dr. Porot. These pains are often due to neoplastic metastases. He emphasized the rôle of cervical, rheumatic and infectious arthritis in these algias. Dr. Mannheimer pointed out that cervicobrachialitis, which was often encountered in soldiers, during the war, and which is observed also in civilians, is caused by the cold, dampness or fatigue. For treatment, he recommends local injections of a solution of cocaine and scopolamine. M. Rolin de Teyssieu discussed brachial algias in the tuberculous and called attention to the rarity of the syndrome. M. Crouzon emphasized the importance of vertebrocostal action in brachial paresthesias, which he considers of more importance than the algias.

GENERAL PARALYSIS

Dr. Dujardin of Brussels presented a paper on general paralysis, or paralytic dementia, a form of cerebral syphilis. He considered it as the most dreadful of all diseases, which in a few months breaks down the mind and physique of the strongest man, rendering him generally impotent and soon causing his death. There was no remedy for this disease until, in 1917, Prof. Wagner von Jauregg of Vienna inoculated general paretic patients with malaria and obtained results that induced him to continue his studies. Since then, this method of treatment has become generally accepted as one that offers some relief to a great number of patients. The results vary considerably with the individual patients. To employ an expression that is commonly heard at present, "the patient is stabilized to a greater or less degree." Very often he is able to resume his work. The treatment, however, is empiric and relapses occur. Nevertheless, it marks an advance in the management of this disease.

At the close of the congress, the participants repaired to the psychiatric hospital for men, at Mortsel, where a special meeting was held and many further communications were presented. Prof. Otokar Janota and Dr. Altschuller of Prague told of a spontaneous remission of paresis in a case of ten years' standing. Prof. R. Targowla of Paris presented a communication on the medicolegal aspects of malaria therapy in paresis, and discussed disseminated neuronitis. Prof. A. Wiener of Copenhagen gave his reflections on the medicolegal conditions of cured paretic patients. Dr. Verstraete discussed the simulation of abnormalities among the inmates of Ghent prison and stated that, owing to improved medical service, the malingerers are soon unmasked, and that their presence has ceased to create as much confusion among the inmates as formerly. Dr. Bersot presented statistics

on the insane of Switzerland, considering various etiologic and social clinical factors and making it possible to study effectively the influence of certain elements of general etiology—alcoholism, for example. The aid given to abnormal children at the dispensary of mental hygiene in Brussels was the subject of a paper by Dr. Vermeylen. Having been organized with systematic foresight, this dispensary is said to render valuable service.

The National Committee Against Charlatanism

Recent meetings of the Fédération médicale belge have shown the need of appointing a joint committee of physicians, dentists and pharmacists for the purpose of considering whether concentrated action would not be desirable. The committee should endeavor to obtain such modifications of the present laws pertaining to the art and practice of healing as past experience may suggest. It should promote the passage of laws of a general character, and should call the attention of members of the medical profession to the best means of suppressing charlatanism. The Comité national contre le charlatanisme has therefore adopted a double slogan: 1. It will seek, with the aid of all the official organizations, to bring about a revision of the laws pertaining to the practice of healing. 2. It will undertake at once a direct campaign against all forms of charlatanism that bring damage to the general public and reflect discredit on medicine as a profession.

The Creation of Provincial Commissions

The government has concluded to regulate the relations between the members of the medical profession and the mutual aid societies, particularly with regard to fees for medical care. Thus it has established in each province a commission composed of an equal number of physicians and "mutualists." At the request of a mutual aid society or of a group of physicians, it will be the duty of the commission to establish regional tariff schedules based on contract practice or on the fee system, or on the two systems combined, within the limits fixed by the national commission of physicians and "mutualists," for the compensation of physicians who agree to treat members of the mutual aid societies. Furthermore, the provincial commissions will endeavor to settle any disputes that may arise, and to look into all questions pertaining to the functioning of the mutual aid societies in their relations to physicians. Each such commission will be composed of eleven, thirteen or fifteen members, including a chairman chosen by the government, who will be preferably a magistrate; a medical officer of the ministry of industry, labor and social welfare, or a person without political connections, who is known for his knowledge of social insurance; also four, five or six "mutualists" to be appointed by the ministry from a number of candidates chosen from the members of the province by the recognized national unions, existing as such for at least ten years and numbering at least one twentieth of the total number of mutualists in the province that belong to a national union; and, finally, of four, five, or six physicians appointed by the ministry from a number of candidates presented by the professional medical societies of the province, affiliated with a recognized medical federation and having existed as such for a period of at least ten years.

Hodgkin's Disease and Tuberculosis

Addressing the Société belge d'études sur la tuberculose, Dr. Stoupel recently discussed the relations between Hodgkin's disease and tuberculosis. The speaker described the clinical features of Hodkin's disease as follows: (1) glandular hypertrophy, frequently localized at the onset in the neck; (2) increase in the size of the spleen; (3) increase in temperature, remittent or intercurrent, and, especially, recurrent; (4) pleuritic and peritoneal exudates of a serous character, with lymphocytes; and, (5) finally, irregular digestive disturbances, with albuminuria, and functional disorders of the liver. He stated that microscopic examination of an involved gland of the subject is of prime importance for differentiating this disease from tuberculous polyadenitis, and expressed the opinion that an etiologic study will disclose the disorder to be due to attenuated tubercle bacilli.

BERLIN

(From Our Regular Correspondent)

Oct. 6, 1928.

Meeting of the German Pediatric Society in Hamburg

At the meeting of the Deutsche Gesellschaft für Kinderheilkunde, held in Hamburg, Sept. 13-15, 1928, William Stern, professor of psychology, of Hamburg, discussed the problem of education. Medicine has again, of late, turned its attention to the study of the individual as a whole. How man as an organism endowed with a mind becomes ill and how he reacts to stimuli are questions based on observation, in the investigation of which psychology must play a part. At the same time, however, the reduction of the complicated problems to a mere type theory has its objections. The comprehension of the mind of the child becomes more difficult for the reason that the child is passing through rapid stages of development. It is necessary that we see the *child* in the child and, on the basis of the material at hand, work out a system of pedagogy adapted to this continuous change, with consideration for the future. Moral teachings and concepts of various kinds, which have a different significance for the child than for the adult, can be correctly evaluated only by the adult who has not yet forgotten his own childhood. Many adults endeavor to suppress memories of their own youth, and many of them who become preceptors and teachers have little understanding of the problems of youth. In selecting a pediatrician it would be wise to choose one who possesses the necessary psychologic qualifications. Sometimes psychoanalysis foists concepts on the child that he normally knows nothing of. When psychic influences are first brought to bear the child is in a state of indifferentiation, from which gradually the special elements of the concepts develop. The two main factors affecting the psychic development of the child are the predisposition and the environment. That applies not only to qualities of character but also to single psychic utterances. It is evident, therefore, that an energetic process of education is absolutely essential. This puts a limitation on the theories of Adler, who holds that the predisposition is, for the most part, good and that the psychic differentiation of children is due almost solely to external factors, including proper encouragement. Hence, the part played by external incidents—psychic traumas—has been overestimated, for new influences may gradually eradicate the effects of such traumas, since, by virtue of predisposition, an individual is not merely a passive stamping ground for the trauma. External and internal factors lead the young child out of the diffused state of mind peculiar to him into the attitude of mind of the school child. At the transitional stage between childhood and adolescence there is another period characterized by a diffused state of the psychic life. The individual is no longer a child but is far from being an adult. A more serious attitude toward life is assumed, associated with more marked manifestations of sex appeal, interest in the formation of leagues or societies, and the like. To establish a prognosis on the basis of such psychic emotions is difficult in this transitional stage.

Professor von Pfaundler of Munich discussed the pathologic symptoms that arise from a false or defective education of children. Certain educational methods and certain faults of education occasion pathologic manifestations, which in private practice, owing to the mother and child complex, are more frequent than in institutions for the rearing of children. The manifestations that cause the children to be brought to the

physician range between naughtiness and disease, in which connection the fathers are more inclined than the mothers to consider the faults harmless. If the physician designates the manifestations as of a purely nervous order, many mothers are satisfied with this information; others want to know what is to be done, while still others regard such diagnosis as unsatisfactory and raise objections. Faulty education and pathologic symptoms of nervousness are both so frequent that it should occasion no surprise if they coincide occasionally. A computation of their synchronous occurrence as compared with the probability of such occurrence reveals a percentage of occurrence from two to five times as frequent as one would expect. The symptoms of faulty education arise from predisposition, environment and mistakes in bringing up. As these symptoms of neurosis are observed very early and in their familial relationships by the pediatrician, he cannot very well be an absolute adherent of the teachings of Freud and Adler. He realizes that the predisposition is of decisive importance. The main purpose of education is the development in the child of the idea that he forms part of a social group (the social sense). This conversion of the natural product into a young human being with cultural tendencies is not accomplished without some conflicts, but these should not be overemphasized. Education is adaptation. Disease lies just beyond the limits of adaptation. Therefore, faulty education may lead to disease. Education is moderation in the psychic realm. It is the application of checks and restraints and thereby the encouragement of progress. It is the establishment of mental order and discipline. It is guidance, for idleness is the beginning of all neuroses. The child does not consider the feeling of a deed well accomplished sufficient reward. Such children in comparing themselves with others of their own age develop feelings of inferiority and discouragement. Education is strengthening the psyche against harmful emotions. The emotions constitute the main highway from faulty education to the manifestation of pathologic symptoms. Starting with the emotions, all sorts of pathologic manifestations are possible of development by way of the vegetative system. Effeminate treatment is more likely to prepare the way for discouragement than stern training.

Professor Homburger of Heidelberg considered the psychopathologic bases of conditions in children with which the pediatrician must cope. In studying psychopathologic conditions in children it is important to consider the period during which the pathologic manifestations appear. The predisposition, which determines the type of life, is of decisive importance. In many psychopathologic conditions it is still possible to educate the child by awakening special interests, and by directing the mind toward social ends. For the characterization of individuals it is not sufficient to classify them under a certain type, since most persons are mixtures of two or more types; nor is their development always continuous and uniform but is characterized rather by phases. There may be periods of standstill, or even of retrogression, in one sector of psychic development, while in other sectors distinct advances are being made.

Dr. Pototzky of Berlin emphasized that the care of children hard to train has never been a subject that awakened much interest in pediatricians. It is necessary that psychopaths be brought under early control. "Open" and "close" treatment must work hand in hand. Special attention must be paid to premature births and to especially difficult births. Physicians who wish to take up therapeutic pedagogy as a specialty should have a thorough training in psychiatry. Preliminary and graduate courses in therapeutic pedagogy should be readily available for physicians, nurses, teachers and social welfare workers. Children who are abnormal mentally or psychically should be brought under special professional care during early childhood, in which work public and private institutions should afford each other the fullest cooperation.

(To be continued)

Marriages

ADRIAN LAMBETH CARSON, JR., Thorpe, W. Va., to Miss Martha Warner of Franklin, August 22.

EDWARD FRANCIS KELLEY, JR., to Miss Kathryn Tierney, both of Philadelphia, September 26.

DUNCAN MORRISON MASSON to Miss Laura May Lyall, both of Rochester, Minn., October 20.

PERRY QUENTIN ROW to Miss Josephine Krinbill, both of Hammond, Ind., October 6.

SANDOR ROTH to Miss Ida R. Lurin, both of New York, November 4.

Deaths

Champe Carter McCulloch, Jr. ✠ Colonel, U. S. Army, retired, Cumberland, Md.; University of Virginia Department of Medicine, Charlottesville, 1891; Medical Department of Columbia College, New York, 1892; entered the army as assistant surgeon in 1892, and was promoted through the various grades to that of colonel in 1917; retired in 1922, at his own request, after thirty years' service; veteran of the Spanish-American and World wars; deputy state health officer of western Maryland; aged 59; died, October 14, at the Walter Reed General Hospital, Washington, D. C.

William Nathaniel Berkeley, New York; University of Virginia Department of Medicine, Charlottesville, 1891; Bellevue Hospital Medical College, New York, 1896; member of the Medical Society of the State of New York; formerly director of the laboratory of experimental medicine, Cornell University; author of "Principles and Practice of Endocrine Medicine"; aged 59; was found dead, October 23, of coronary sclerosis and thrombosis.

William F. Lockwood ✠ Baltimore; University of Virginia Department of Medicine, Charlottesville, 1875; at one time dean and professor of medicine, College of Physicians and Surgeons, and professor of medicine, University of Maryland School of Medicine; formerly on the staffs of St. Joseph's and St. Agnes' hospitals; aged 75; died suddenly, October 16, at Elkridge, Md.

Clinton A. Rice, Rogers, Ark.; University of Arkansas School of Medicine, Little Rock, 1901; member of the Arkansas Medical Society; at one time secretary of the Benton County Medical Society; county health officer; formerly member of the school board, and on the staff of the Home Hospital; aged 63; died suddenly, October 7, of heart disease.

William Robinson Cochrane ✠ Knoxville, Tenn.; University of Pennsylvania School of Medicine, Philadelphia, 1885; registrar of the bureau of vital statistics, and formerly director of the city board of health; on the staff of the Knoxville General Hospital; aged 63; died, October 15, of chronic myocarditis and enteritis.

Patrick Sylvester Murphy, Cleveland; Western Reserve University School of Medicine, Cleveland, 1915; member of the Ohio State Medical Association; served during the World War; on the staff of the St. Ann's Hospital; aged 39; died in September, at the Mount Sinai Hospital, of septicemia.

Franklin P. Hatfield, Olathe, Kan.; Eclectic Medical Institute, Cincinnati, 1886; also a druggist; at one time county health officer; formerly member of the state board of medical examination and registration; aged 66; died, October 17, of fibrosis of the right lung following pleurisy with effusion.

Ray Jackson Neff, Newport News, Va.; University of Virginia Department of Medicine, Charlottesville, 1923; member of the Medical Society of Virginia; on the staff of the Elizabeth Buxton Hospital; aged 30; died, October 21, of burns received when his automobile caught fire.

Thomas W. Kirby ✠ Portland, Ore.; Trinity Medical College, Toronto, Ont., Canada, 1895; L.R.C.P., London, and L.R.C.S., England, 1906; University of Edinburgh, Scotland, 1906; aged 61; died, October 16, at the Good Samaritan Hospital, of coronary thrombosis.

Charles Gilbert Davis ✠ Chicago; Eclectic Medical Institute, Cincinnati, 1871; University of Virginia Department of Medicine, Charlottesville, 1873; formerly on the staff of the Cook County Hospital; aged 79; died, October 31, probably of cerebral thrombosis.

Hiram Barber Ehle, Susanville, Calif.; Hahnemann Medical College and Hospital, Chicago, 1882; Rush Medical College, Chicago, 1888; member of the California Medical

Association; county health officer; aged 68; died, October 29, of facial erysipelas.

Arthur McGowen Johnson, Montgomery, Ala.; University of Tennessee College of Medicine, Memphis, 1923; member of the Medical Association of the State of Alabama; aged 29; died, October 15, at St. Margaret's Hospital, of perforated duodenal ulcer.

Enoch H. Miller ✠ Liberty, Mo.; Missouri Medical College, St. Louis, 1874; member of the American College of Physicians; for thirty years a member of the board of education; aged 77; died, October 8, of influenza and bronchopneumonia.

Matthew Stevenson Denault ✠ Walkerton, Ind.; Rush Medical College, Chicago, 1897; formerly member of the board of health; aged 65; died, October 25, at the Holy Family Hospital, La Porte, following an operation for gastric carcinoma.

Hermann N. Appel, Los Angeles; Columbia University College of Physicians and Surgeons, New York, 1899; formerly assistant professor of pediatrics at the New York Post-Graduate Medical School; aged 50; died, September 28, of angina pectoris.

William Simpson ✠ San Jose, Calif.; Long Island College Hospital, Brooklyn, 1878; past president of the Santa Clara County Medical Society; for many years health officer of Santa Clara County; aged 82; died, September 23, of angina pectoris.

Charles Edward McCauley ✠ Aberdeen, S. D.; Rush Medical College, Chicago, 1902; formerly member of the state board of medical examiners; on the staff of St. Luke's Hospital; aged 53; died suddenly, November 5, of heart disease.

George Douglas Meriwether, Buena Vista, Va.; University of Pennsylvania School of Medicine, Philadelphia, 1870; member of the Medical Society of Virginia; Confederate veteran; aged 86; died, October 7, of bronchopneumonia.

Willis George Bond, Revere, Mass.; Bellevue Hospital Medical College, New York, 1889; member of the Massachusetts Medical Society; formerly member of the school committee; aged 72; died, October 30, of brain tumor.

Theodore C. Guenther, Chicago; Northwestern University Medical School, Chicago, 1896; member of the Illinois State Medical Society; aged 56; died, October 28, at St. Joseph's Hospital, of epidemic cerebrospinal meningitis.

Frederick H. Milliken, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1879; member of the Medical Association of the State of Pennsylvania; aged 70; died, September 23, of cerebral hemorrhage.

Rawley White Martin, Jr., Chatham, Va.; University of Virginia Department of Medicine, Charlottesville, 1894; member of the Medical Society of Virginia; aged 57; died, October 18, of a self-inflicted bullet wound.

John Frank Elliott, Kansas City, Mo.; Kansas City Hahnemann Medical College, 1905; Homeopathic Hospital College, Cleveland, 1881; aged 72; died, October 9, of chronic myocarditis with coronary thrombosis.

Clarence E. Allen, Swanton, Vt.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1883; member of the Vermont State Medical Society; aged 72; died, October 14, of cerebral hemorrhage.

Edward Govan Hill ✠ Richmond, Va.; University College of Medicine, Richmond, 1900; aged 64; died, October 13, at St. Elizabeth's Hospital, of septicemia following a carbuncle and diabetes mellitus.

Marshall Davis Ewell, Memphis, Tenn.; Chicago Medical College, 1884; formerly dean of the Chicago Kent College of Law; aged 84; died, October 4, of cardiac insufficiency and pulmonary edema.

George John Baker, Detroit; Detroit College of Medicine and Surgery, 1909; member of the Michigan State Medical Society; aged 49; died, September 26, while aboard his yacht at Seville, Spain.

William Frank Greene, Mount Vernon, N. Y.; Medical Department of Columbia College, New York, 1878; aged 73; died, October 17, at the home of his sister in Winchester, Va., of heart disease.

Albert John Nunnamaker ✠ Fort Thomas, Ky.; Eclectic Medical College, 1914; professor of anatomy and formerly assistant secretary at his alma mater; aged 43; died, October 26, of heart disease.

Caroline A. Hemiup Perkins, Geneva, N. Y.; Woman's Medical College of Pennsylvania, Philadelphia, 1881; aged 75; died, June 29, at the Geneva General Hospital, of chronic myocarditis.

James Madison Walton, Memphis, Tenn.; Memphis Hospital Medical College, 1883; member of the Tennessee State Medical Association; aged 67; died, May 21, of carcinoma of the liver.

John Lyman Andrews ✠ New York; Medical Department of Columbia College, New York, 1889; aged 61; died, October 28, at Hartford, Conn., of bronchopneumonia and arteriosclerosis.

Louis Arthur Shane, Portland, Ore.; University of Oregon Medical School, Portland, 1900; formerly demonstrator of anatomy at his alma mater; aged 52; died, October 1, of angina pectoris.

Robert Hanson De Coux, Grand Rapids, Mich.; Michigan College of Medicine and Surgery, 1897; member of the Michigan State Medical Society; aged 58; died, October 24, of lymphatic leukemia.

Joseph H. Greer, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1875; aged 76; died, October 16, of myocarditis and shock, following an operation for stone in the bladder.

George L. Wiles, Stroud, Okla.; Ensworth Medical College, St. Joseph, Mo., 1892; member of the Oklahoma State Medical Association; aged 58; died, April 20, of angina pectoris.

Lieven D. DePoorter, New Orleans; Medical Department of the Tulane University of Louisiana, New Orleans, 1898; aged 58; died, October 8, at Jackson, La., of paralysis.

Hunter McGuire Brumback, Boyce, Va.; University College of Medicine, Richmond, 1900; member of the Medical Society of Virginia; aged 53; died, July 27, of pyelitis.

James George Williamson, Columbia, Tenn.; University of Nashville Medical Department, 1867; Confederate veteran; aged 85; died, September 2, of mitral regurgitation.

David Wilbur Vail, Seattle; Western Reserve University School of Medicine, Cleveland, 1869; aged 81; died, August 28, of lobar pneumonia and chronic cystitis.

James T. Laughead, Terre Haute, Ind.; Medical College of Ohio, Cincinnati, 1877; aged 76; died, October 14, of hypostatic pneumonia and arteriosclerosis.

Lloyd Fisher Smith, Juliaetta, Idaho; University of Oregon Medical School, Portland, 1908; aged 48; died, August 15, of complications, following influenza.

Frederick Richard Burdick, Syracuse, N. Y.; American Eclectic Medical College, Cincinnati, 1884; aged 69; died, October 13, of myocarditis.

William Clark Kitchen, West Toledo, Ohio; Detroit College of Medicine and Surgery, 1893; aged 58; died, August 11, of valvular heart disease.

Andrew McAdams Stovall ✠ Jasper, Ala.; Louisville (Ky.) Medical College, 1880; aged 70; died, September 28, of softening of the brain.

Gerritt Jacobus Fredriks, Cincinnati; Medical College of Ohio, Cincinnati, 1873; aged 85; died, October 15, at his home in Norwood, Ohio.

Martin Gay Atkinson, Watertown, N. Y.; Medical Department of the University of the City of New York, 1884; aged 68; died, October 1.

William A. Jamison, Latrobe, Pa.; Jefferson Medical College of Philadelphia, 1879; aged 73; died, September 27, of heart disease.

John C. Frazier, Buffalo, W. Va.; College of Physicians and Surgeons, Baltimore, 1899; aged 50; died, September 20, of paralysis.

John D. Duff, Gibbs, Mo.; Ensworth Medical College, St. Joseph, 1890; aged 74; died, October 6, of chronic myocarditis.

W. B. Thewalt, Milwaukee; Chicago Homeopathic Medical College, 1892; aged 67; died, October 5, of carcinoma of the liver.

Alva J. Kimmel ✠ Hudson, Ind.; Miami Medical College, Cincinnati, 1886; aged 71; died in October, of heart disease.

Fred Davenport Heisordt, Bay City, Mich.; Detroit Medical College, 1882; aged 68; died, March 9, of arteriosclerosis.

Louis Marquet, New York; University of Paris, France, 1870; aged 84; died, October 17, of carcinoma of the prostate.

George J. Caraway, Brookhaven, Miss. (licensed, Mississippi, 1882); aged 71; died, October 6, of arteriosclerosis.

Jesse J. Crumbley, Cedartown, Ga.; Atlanta Medical College, 1892; aged 58; died, September 28, of asthma.

Correspondence

HEART TIRE—A CORRECTION

To the Editor:—An author naturally is pleased to see editorial comment on one of his papers. However, that pleasure is sadly marred when he finds that the editorial, as happened with the editorial entitled "Heart Tire" in THE JOURNAL, October 6, attributes to him an idea opposite to the one expressed in his article. The editorial quotes me as saying that digitalis "can be of great benefit in small doses." "These patients," I am quoted as saying, "are benefited by even five drops of the tincture administered twice a day, and even by less dosage." What I actually wrote is:

> Patients that I have grouped as having myocardial fatigue are in this class, and yet one often sees them in their own opinion entirely dependent on a daily or twice daily dose of five drops of tincture of digitalis, which, by the way, would be about 2 to 4 minims daily or possibly as little as 1¼ minims. Others of these patients may take small doses of digitalis at intervals when their heart is "bad," getting an immediate relief, all of which goes to show that for such patients digitalis in such doses is not a cardiac medicine but one that works directly on the mind. For the physician who has made the original mistake of diagnosing such a patient as having heart disease, perchance such digitalis therapy can be excused. He may even think that these minute doses of digitalis do influence the heart in the sense of being a cardiac stimulant (THE JOURNAL, August 25, p. 551).

I had thought I had made it clear that I did not believe in the efficiency of these small doses of digitalis and had put them, by the foregoing sentences, in the class of placebos. Now let me repeat that it is my belief that such small doses of digitalis as five measured minims of the tincture of digitalis, once or twice a day, have little or no digitalis effect and that, if prescribed, as so often is the case, in the form of drops, they have no digitalis effect, for five drops usually is about 3 measured minims and may be as little as 1¼ measured minims.

HENRY A. CHRISTIAN, M.D., Boston.

DETECTION OF LACTOSURIA BY A BACTERIAL METHOD

To the Editor:—Some months ago you were kind enough to publish a paper of mine on the detection of lactosuria (THE JOURNAL, June 2, p. 1773).

With regard to the technic therein described, I should like to add that it will be found to be of advantage to mix the urine, before boiling, with the same amount of peptone water, which is procurable in all bacteriologic laboratories; or a small amount (1 per cent) of sugar-free peptone powder, such as Witte peptone, may be added direct to the urine instead of the peptone water. This greatly facilitates the growth of the bacteria used in the method and also facilitates the production of gas.

This small technical detail was mentioned in all my previous articles on the mycologic detection of various sugars in the urine, but unfortunately was left out in the paper I sent to you.

ALDO CASTELLANI, M.D.,
33 Harley Street, London, W. 1.

AN ECHO OF THE A. E. G. HALL QUACKERY

To the Editor:—In the article appearing in THE JOURNAL, October 13, regarding Alfred Ernest George Hall, a quack psychologist, a bill under my name ("Dr. Ferd. Werner") of $139.15 for various laboratory work was published as having been submitted to Mr. X for services to his wife.

In August, 1927, I made a basal metabolism test for Mrs. X, who was a patient of Dr. S. Edgar Bond of Richmond, Ind. The fee of $5, the usual charge, was paid in cash by Dr. S. Edgar Bond. This is the only service I ever rendered Mrs. X. I have never had contact with Hall and I do not know Nanna G. Wieder.

FERDINAND WERNER, M.D., Richmond, Ind.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

"POWDER HEAD" OR "DYNAMITE HEADACHE"

To the Editor:—Permit me to ask a question bearing on "dynamite headache." Frequently men handling dynamite and other high explosives are handicapped by a more or less intense, throbbing, sickening headache; this condition no doubt occurs from absorption of the agent in quantities far exceeding the therapeutic limit and manifests the initial stage of poisoning. Manufacturers of this explosive declare that there is no cure. Do any of your readers know of a cure for this distressing ailment? Ergot has been suggested—by mouth or hypodermically. Please omit name.

M.D., Texas.

ANSWER.—"Powder head," or "dynamite headache," is the lot of nearly every new worker engaged in work involving the use of nitroglycerin. The symptoms are those associated with the nitrite group. The regular worker as a rule develops a tolerance for this toxic agent, which tolerance is quickly lost on vacation periods and even over week end rest periods. This tolerance does not extend to gross exposure, especially in weather that is high in temperature and water content of the air. Most powder men have learned that a small piece of dynamite carried around beneath their hat band or in a pocket will perpetuate their tolerance. Since there appears to be no known cure for the headache during the usual paroxysmal period, control should be procured through prevention. In addition to the suggestion made, the following suggestions are worthy of consideration:

Only such workers should be employed permanently as are able to develop a tolerance against nitroglycerin and toxic properties.

Regularity of work favors freedom from distress. On this account the work involving exposure to nitroglycerin should as far as is practical be so organized as to afford regular employment for a few workers rather than sporadic work for a larger number.

If exposed workers are encouraged to carry around a small piece of dynamite for tolerance prolongation, other members of their families may develop headaches. On this account, placing it beneath hat bands is more desirable in that this raiment may be kept out of living rooms of homes.

TREATMENT OF CYSTITIS WHEN URINE IS ALKALINE

To the Editor:—What is the up-to-date treatment of cystitis with alkaline urine? Please give in detail the solution and the amount to be taken to neutralize the alkaline urine. Please omit name.

M.D., Massachusetts.

ANSWER.—A rational therapy of cystitis depends on the establishment of a complete diagnosis. It must be ascertained whether there are any obstructions to the urinary outflow, such as urethral strictures and enlargement of the prostate. It must also be determined whether or not the upper urinary tract is involved. Pyonephrosis, for instance, will not only furnish alkaline urine but maintain an existing cystitis by the permanent reinfection due to the flow of contaminated urine into the bladder. Finally, the capacity of the bladder, the degree of intolerance and the systemic reaction as signified by temperature and digestive derangements must be considered. The examination should include the organs adjacent to the bladder: the seminal vesicles in the male, the uterine appendages in the female. Inflamed and dilated seminal vesicles, a parametritic exudate or a pyosalpinx attached to the bladder may act as contributory causes in sustaining cystitis.

A decided and sustained effort should be made to acidify the urine. This may be accomplished by administering inorganic acids, such as diluted hydrochloric or phosphoric acid, or sodium acid phosphate (sodium biphosphate-U. S. P.). The coincident administration of methenamine-U. S. P. will exert a mild antiseptic influence. The local treatment is regulated by general rules and by cystoscopic study. The bladder may be cleansed by flushing with an indifferent fluid, such as a 2 per cent boric acid solution or a 1:3,000 mercuric oxycyanide solution. Viscid mucus closely adherent to the bladder wall is best removed by irrigations with physiologic solution of sodium chloride.

Flushings of the bladder should never be carried to distinct distention of the bladder, an inflamed organ not bearing up well under stretching. The slightest feeling of discomfort calls

for interruption of the injection, which, however, may be repeated until the returning fluid appears to be clear or at least free from large flakes. Diffuse involvement of the mucosa calls for the deposition in the bladder of solutions of low percentage following the cleansing. Inflammatory involvement of the trigon responds better to the instillation of solutions of higher concentration. For this purpose solutions of silver salts seem to be most efficacious. As applications of the milder grade, solutions of silver nitrate 1:3,000 or solutions of strong silver protein (protargol type) 1:500 are used; for instillations of higher concentration, strong silver protein from 0.25 to 1 per cent. After the bladder is cleansed and emptied, from 30 to 60 cc. (1 to 2 ounces) of the solution selected is deposited and left in the bladder. The concentration of the topical application is increased with the progress of treatment. The production of decided pain by an instillation indicates too high a concentration of the solution applied.

SENSITIVITY TO PLANT AND ANIMAL PROTEINS

To the Editor:—I have a patient who has hay-fever symptoms a great deal which come on during the entire year intermittently. He reacts slightly to cheese, bananas, chenopods, artemisia, pork, horse dander, timothy, orchard grass, red top, and very strongly to daisy and sunflower and ragweed. What protein treatment would you suggest with the reactions like these?

M. H. NEWTON, M.D., Little Falls, N. Y.

ANSWER.—It is not at all uncommon to find patients sensitive to protein of both plant and animal origin. The history usually reveals that a sensitiveness to one protein was first noticed, and that subsequent sensitizations developed gradually. The patient described is strongly sensitive to the pollens that cause the late summer hay-fever and less sensitive to the pollens that cause the early summer hay-fever. If the history shows that clinical symptoms are decidedly more troublesome at these times, treatment should be given for both groups of pollens. The treatment for the early summer hay-fever, which is caused by grass pollens, should be started eight or ten weeks before the grass pollens begin to fly, and the pollen extract used should contain the pollens of the grasses most abundant in that territory. Timothy pollen extract is the one most commonly used, but it is sometimes advisable to include another grass pollen. The reactions to the late summer pollens, daisy, sunflower and ragweed, indicate treatment with ragweed pollen extract only, as the pollen of the daisy and the sunflower is carried by insects and can cause symptoms only by direct contact. This treatment should be started about June 1. In addition to this treatment the patient should avoid exposure to horses and should discontinue eating those foods that give distinct positive reactions. Specific treatment by injection often increases the patient's resistance to other proteins to which he is sensitive.

PREVENTION OF ABDOMINAL RELAXATION POST PARTUM

To the Editor:—Is there a method of treatment to be instituted during pregnancy that will prevent a postparturient abdomen from becoming permanently relaxed? What is the method? Is it advisable to use it as a routine in all pregnancies? What men are using it? Once the anterior abdominal muscles have lost their supporting tonus after parturition, what are the symptoms and complications, and what is considered good treatment? Please omit name.

M.D., Rhode Island.

ANSWER.—Few obstetricians believe that there is any universal, certain method of preventing relaxation of the abdominal wall after childbirth. However, a few procedures advocated by all obstetricians help to diminish the extent of the relaxation and in some instances prevent it entirely. The amount of permanent relaxation depends in a large measure on the extent of distention of the abdominal wall during pregnancy, the overstretching during labor, and not infrequently on the excessive development of gas in the intestine after labor. Whereas the wearing of a proper abdominal support during pregnancy helps to prevent relaxation, the wearing of tight corsets predisposes to weakness of the abdominal muscles. The muscular tone of the abdominal wall may be restored to a large degree after labor; hence active exercises are to be prescribed and these are to be done by the patient a few times daily both in and out of bed. These exercises may safely be begun forty-eight hours after labor. In addition, after the first week, the abdominal wall and trunk may be massaged.

McPheeters a few years ago recommended persistent, systematic daily massage of the abdomen with both hands and stated that his method will absolutely prevent the formation of striae gravidarum. This type of massage must be begun in the second or third month of pregnancy, for it will ordinarily not be entirely successful if begun later than the fourth month. During pregnancy the deeper supports of the abdominal viscera, namely, the abdominal muscles, should be protected by maternity abdominal supporters. McPheeters reports that the results of his procedure are complete relief from backache, the discomfort of distention, groin pains, persistent frequency of urination, and fatigue on slight exertion. There is no diastases of the rectus muscles and there is a minimum of striae gravidarum or none at all. (These are all symptoms of relaxation of the abdominal muscles.) The abdominal wall returns to its former shape and tone rapidly after delivery, and fewer patients are left with visceroptosis.

In a discussion on relaxation of the abdominal wall it must be remembered that constitution plays an important part. There are some patients in whom no treatment will prevent relaxation. This is the group of women with the condition known as status asthenicoptoticus, who have a congenital, constitutional general laxity of the connective tissue and muscle of the body. In these women, the abdominal wall readily gives way during pregnancy and labor.

References:

McPheeters, G. C. H.: *Am. J. Obst. & Gynec.* **4**: 178 (Aug.) 1922.
Polak, J. O.: *Am. J. Obst. & Gynec.* **13**: 432 (April) 1927.
De Lee, J. B.: Textbook of Obstetrics, ed. 5, 1928, p. 349.

CALCIUM DEFICIENCY — THE MURPHY TREATMENT — THE MIKULICZ DRAIN — SALT FREE DIET

To the Editor:—1. What are some manifestations of calcium deficiency? 2. What is the Murphy-Fowler-Ochsner treatment? 3. The Mikulicz drain? 4. Allen's salt free diet?

JOSEPH HALTON, M.D., Sarasota, Fla.

ANSWER.—1. Calcium deficiency is associated with rickets, osteoporosis and osteomalacia. It may be due to lack of calcium in the diet, to lack of vitamin D, which is a necessary adjuvant in the metabolism of calcium, or to a disturbance of the calcium balance due to disorder of the parathyroid glands. A disturbance of this balance is manifested by tetany.

2. The Murphy-Fowler-Ochsner treatment embodies points in the treatment of peritonitis that were advocated by these three men and are included in the plan of treatment popularized by Dr. John B. Murphy. It consists of incisions for drainage as indicated, with the patient in the Fowler (semisitting) position postoperatively, and with continuous slow irrigation of the lower bowel with physiologic solution of sodium chloride. This keeps the bowels at rest, helps to limit spread of the inflammation, favors pelvic drainage, and furnishes a supply of body fluid with a minimum of discomfort. Surgical textbooks explain the general method in detail under peritonitis.

3. The Mikulicz drain is a drain that is formed by packing a single layer of gauze with several thick wicks of gauze as it is being pushed into a wound cavity. That is, the single layer of gauze is spread over the area into which it is to be inserted; then the ends of separate wicks of gauze, held by dressing forceps, are placed in the center of the loose gauze and all is pushed into the wound cavity, after which the forceps are withdrawn. This makes sort of a bag drain, and any size desired can be made extemporaneously. It may be used in numerous kinds of wounds but is no more serviceable than a small rubber-wrapped gauze drain.

4. Dr. Frederick M. Allen states: "A salt free diet means that no salt is to be added either at the table or in cooking, and that the foods shall be chosen from among those which are lowest in natural salts." The subject, with the salt content of various foods, is fully considered in his book entitled, Treatment of Kidney Disease and High Blood Pressure: Part I. A Practical Manual for Physicians and Patients. It is published by the Physiatric Institute, Morristown, N. J.

SEVERITY OF REACTION AND EFFECTIVENESS OF VACCINE

To the Editor:—Is there any relation between the amount or severity of the reaction of a given vaccine and the value to the patient as a cure or prophylaxis, the dosage of vaccine being two drops at the first injection and the amount being doubled as usual for each injection thereafter? Kindly omit name.

M.D., Amherst, Mass.

ANSWER.—The value of a vaccine, curative or prophylactic, depends on its power to stimulate in the patient cellular processes that have an anti-infectious effect. There is no exact knowledge concerning the relation between the general reaction produced by a dose of vaccine and the obvious reactions in the patient, but the general impression prevails that severe general reactions would better be avoided as far as possible as the results may be harmful to the patient and lower, rather than increase, his resistance, at least for the time being. Dosage of the vaccine by drops is of course purely empiric; the important thing to know is what is in the drops.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

DELAWARE: Wilmington, Dec. 11, 1928. Sec., Dr. Harold L. Springer, 1013 Washington St., Wilmington, Del.

KENTUCKY: Louisville, Dec. 4-6. Sec., Dr. A. T. McCormack, 532 West Main St., Louisville, Ky.

LOUISIANA: New Orleans, Dec. 13-15. Sec., Dr. R. B. Harrison, 1507 Hibernia Bank Bldg., New Orleans, La.

MARYLAND: Baltimore, Dec. 11-14, 1928. Sec., Dr. Harry M. Fitzhugh, 1211 Cathedral St., Baltimore, Md.

NEBRASKA—REGULAR: Lincoln, Nov. 26-28. Dir., Mrs. Clark Perkins, Bureau of Examining Boards, Dept. of Public Welfare, Lincoln, Neb.

NORTH DAKOTA: Grand Forks, Jan. 1, 1929. Sec., Dr. G. M. Williamson, Grand Forks, N. D.

OHIO: Columbus, Dec. 5-7. Sec., Dr. H. M. Platter, Ohio State Savings Bldg., Third and Gay Sts., Columbus, Ohio.

OREGON: Portland, Jan. 2-4, 1929. Sec., Dr. Joseph F. Wood, 510 Selling Bldg., Portland, Ore.

RHODE ISLAND: Providence, Jan. 3-4, 1929. Sec., Dr. B. U. Richards, State House, Providence, R. I.

TEXAS: Ft. Worth, Nov. 20-22. Sec., Dr. T. J. Crowe, 918 Mercantile Bank Bldg., Dallas, Texas.

VIRGINIA: Richmond, Dec. 4-7. Sec., Dr. J. W. Preston, State Bd. of Med. Examiners, 720 Shenandoah Life Bldg., Roanoke, Va.

WEST VIRGINIA: Morgantown, Nov. 27. Sec., Dr. W. T. Henshaw, State Health Department, Charleston, W. Va.

WISCONSIN—Basic Science: Milwaukee, Dec. 15, 1928. Sec., Prof. R. N. Bauer, 3410 Wisconsin Ave., Milwaukee, Wis.

Wisconsin June Examination

Dr. Robert E. Flynn, secretary of the Wisconsin State Board of Medical Examiners, reports the examination held at Milwaukee, June 26-28, 1928. The examination covered 18 subjects and included 100 questions. An average of 75 per cent was required to pass. Of the 62 candidates examined, 61 passed, including 2 osteopaths, and 1, an osteopath, failed. Nineteen physicians were licensed through reciprocity with other states, including 2 osteopaths, and 1 by endorsement of credentials. The following colleges were represented:

College	Year Grad.	Per Cent
PASSED		
Northwestern University Medical School	(1928) 85, 86, 87, 87,	89
Rush Medical College	(1928)	89
University of Illinois College of Medicine	(1928)	82
Harvard Medical School	(1927)	88
University of Pennsylvania School of Medicine	(1927)	84
Marquette University School of Medicine	(1928)	79, 79, 81, 81, 82, 82, 82, 83, 83, 83, 83, 84, 84, 84, 85, 85, 85, 85, 85, 86, 86, 86, 86, 87, 87, 87, 88, 88, 88, 89, 89, 90, 90, 90, 90, 91
University of Wisconsin Medical School	(1927)	79, 81, 83, 83, 84, 84, 85, 87, 87, (1928) 90
Queen's University Faculty of Medicine	(1927)	87
University of Vienna, Austria	(1910)	83
Osteopaths		82, 87
FAILED		
Osteopath		79

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
Loyola University School of Medicine	(1926)	Illinois
Rush Medical College	(1927) (2), (1928) (2)	Illinois
University of Illinois College of Medicine	(1927)	Illinois
University of Louisville School of Medicine	(1927)	Indiana
Johns Hopkins University School of Medicine	(1916)	Maryland
University of Michigan Medical School	(1925)	Michigan
University of Minnesota Medical School	(1925)	Minnesota
Marion Sims-Beaumont Medical College	(1904)	Missouri
University of Nebraska College of Medicine	(1921)	Nebraska
University of Pennsylvania School of Medicine	(1920)	Minnesota
University of Tennessee College of Medicine	(1899)	Alabama
University of Texas School of Medicine	(1926)	Texas
Munster University of Cologne, Germany	(1923)	Maine
University of Madrid, Spain	(1925)	Tennessee
Osteopaths		Illinois, Michigan

College	Year Grad.	Endorsement with
ENDORSEMENT OF CREDENTIALS		
University of Illinois College of Medicine	(1927)	U. S. Navy

California June Reciprocity Report

Dr. Charles B. Pinkham, secretary of the California State Board of Medical Examiners, reports 59 physicians licensed through reciprocity with other states as of June, 1928. The following colleges were represented:

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
College of Physicians and Surgeons (U. of So. Calif.)	(1922)	Arizona
University of Colorado School of Medicine	(1927)	Colorado
Bennett College of Eclectic Med. and Surg.	(1907)	Idaho
Chicago Homeopathic Medical College	(1904)	Montana
Chicago Medical College	(1887)	Wisconsin
Hahnemann Medical College and Hosp., Chicago	(1896)	Nebraska
Loyola University School of Medicine	(1918)	Idaho
Northwestern University Medical School	(1913)	Iowa
Rush Medical College	(1923)	Illinois
Univ. of Illinois College of Medicine	(1898) (1907) (1916)	Illinois
Indiana University School of Medicine	(1914)	Indiana
State Univ. of Iowa College of Medicine	(1925)	Iowa
University of Kansas School of Medicine	(1924) (1925)	Kansas
Hospital College of Medicine, Louisville	(1893)	Iowa
Louisville Medical College	(1897)	Indiana
Johns Hopkins Univ. School of Medicine	(1921)	New York
Tufts College Medical School	(1902)	Washington
Univ. of Mich. Med. Sch.	(1921) (1923) (1925) Mich. (1923)	Arizona
Hamline University Medical Department	(1906)	Montana
University of Minnesota Medical School	(1890) (1901) (1923) (1924) (1928)	Minnesota
Beaumont Hospital Medical College	(1896)	Missouri
Central Medical College of St. Joseph	(1899)	Nebraska
Missouri Medical College	(1897)	Colorado
St. Louis University School of Medicine	(1913) Idaho (1926)	Indiana
Washington Univ. School of Med.	(1916) (1925) Utah (1922)	Missouri
Creighton Univ. School of Med.	(1902) Okla. (1925) (1926)	Nebraska
University of Nebraska College of Medicine	(1921) (1924)	Nebraska
Syracuse University College of Medicine	(1910)	Penna.
University and Bellevue Hosp. Med. College	(1925)	New York
University of Oregon Medical School	(1924)	Oregon
Hahnemann Med. Coll. and Hosp. of Philadelphia	(1891)	Ohio
Jefferson Medical College of Philadelphia	(1913)	Utah
Medico-Chirurgical College of Philadelphia	(1916)	Utah
Univ. of Pennsylvania School of Med.	(1924) Pa. (1925)	New York
Meharry Medical College	(1921)	Tennessee
University of Texas School of Medicine	(1918)	Texas
University of Toronto Faculty of Med.	(1923) Pa. (1924)	Michigan
University of Breslau, Germany	(1914)	Wyoming
National University of Ireland	(1919)	Colorado
Aichi Medical College, Japan	(1921)	*Washington
Charkoff Women's Medical Institute	(1916)	* Colorado

* Verification of graduation in process.

North Carolina June Examination

Dr. John W. McConnell, secretary of the North Carolina State Board of Medical Examiners, reports the written and practical examination held at Raleigh, June 18, 1928. The examination covered 16 subjects and included 100 questions. An average of 80 per cent was required to pass. Of the 73 candidates examined, 69 passed and 4 failed. Eighteen physicians were licensed by reciprocity with other states and one by endorsement of credentials. The following colleges were represented:

College	Year Grad.	Per Cent
PASSED		
George Washington University Medical School	(1928) 83.6,	85.8
Howard University School of Medicine	(1927) 81, (1928)	84.4
Emory University School of Medicine	(1927) 87.8, (1928)	85.8
University of Georgia Medical Department	(1926) 84.7,	90.1
Rush Medical College	(1928)*	92.8
University of Louisville School of Medicine	(1927)	81.8
Tulane University of Louisiana School of Medicine	(1925) (1928) 83, 84, 84.3, 89.7, 90.7	88.4
University of Maryland School of Medicine and College of Physicians and Surgeons	(1928)	89.8
Harvard Medical School	(1927)	89.0
Tufts College Medical School	(1927)	89.8
Washington University School of Medicine	(1928) 85.8,	88.0
Syracuse University College of Medicine	(1928)	85.4
Ohio State University College of Medicine	(1928)	86.6
Jefferson Medical College of Philadelphia	(1928) 87, 88.1, 88.3, 88.3, 90.8, 92, 92.1, 92.3	84.4,
University of Pennsylvania School of Medicine	(1927) 88.6, (1928) 81, 82, 85.7, 86.1, 86.7, 88.6, 89.3, 90.1, 90.3, 91.4, 91.5, 92.1, 93.1, 93.7	88.8,
Medical College of the State of South Carolina	(1927) (1928) 80.0, 83.3, 83.7, 87.0	84.7,
Meharry Medical College	(1927)	80, 82.4
Vanderbilt University School of Medicine	(1928)	86.4
Medical College of Virginia	(1926) 80, (1927) (1928) 82.8, 85.3, 86, 87.7, 88.7, 89, 91, 91.1	80, 82.7,
University of Virginia Department of Medicine	(1926)	86.4,
University of Virginia Dept. of Med.	(1926) 86.4, (1928)	89.6
FAILED		
Meharry Medical College	(1927) 67, 74.4, (1928)	64.4, 69.8

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
College of Medical Evangelists	(1925)	California
Howard University School of Medicine	(1924)	Virginia
Emory University School of Medicine	(1925)	Georgia
University of Louisville School of Medicine	(1924)	Kentucky
Tulane University of Louisiana School of Medicine	(1921)	W. Virginia
College of Physicians and Surgeons, Baltimore	(1909)	W. Virginia
Johns Hopkins University School of Medicine	(1923)	Maryland
Univ. of Maryland Sch. of Med. & Coll. of P. & S.	(1918)	W. Virginia
Tufts College Medical School	(1925)	Mass.
Barnes Medical College	(1893)	Missouri
Jefferson Medical College of Philadelphia	(1906)	Penna.
Woman's Medical College of Pennsylvania	(1922)	S. Carolina
Medical College of the State of S. Carolina	(1912), (1924)	S. Carolina
Medical College of Virginia	(1909)	Virginia
University of Virginia Department of Medicine	(1925) (2)	Virginia
Dalhousie University Faculty of Medicine	(1925)	Nova Scotia

College	Year Grad.	Endorsement with
ENDORSEMENT OF CREDENTIALS		
Harvard Medical School	(1925)	N. B. M. Ex.

* Not a graduate until 1929, when a year of internship is completed.

Book Notices

HANDBUCH DER RÖENTGENTHERAPIE. Herausgegeben von Geh. Medizinalrat Prof. Dr. med. Paul Krause, Direketor der medizinischen Universitätsklinik in Münster i. W. (Handbuch der gesamten medizinischen Anwendungen der Elektrizität einschliesslich der Röntgenlehre herausgegeben von H. Boruttau, und L. Mann. Band III, 2. Teil [in 3 Teilbänden]). III. Teilband. Paper. Price, 56 marks. Pp. 731, with 273 illustrations. Leipzig: Georg Thieme, 1928.

This is the third and last volume of the handbook on the medical application of electricity. The editor justifies the publication of this tome with his conviction that roentgen therapy is indispensable in every branch of practical medicine. The chapter on roentgen therapy in ophthalmology is preceded by a description of the biologic action on the eye of the rays and the possible harm caused. In general, the anterior ocular structures are more sensitive than the interior and the background of the eye. When the eyelids are being treated, the eye proper must be protected by a lead glass screen. The irradiation of epithelioma of the eyelid results in a high percentage of definite cures. Previous irradiation does not prejudice a subsequent operation in roentgen-refractory cases. The technic to be employed is minutely described. Sarcoma of the choroid as a rule resists the x-rays. In glioma of the retina the results are not encouraging. The same is true of orbital tumors. It is asserted that in tumors of the hypophysis roentgen therapy has some superiority over operative intervention. The therapeutic action on trachoma is doubtful as to results. In tuberculosis of the eye and its surrounding structures, radiotherapy is always indicated under proper precautions, which are minutely described. For the roentgen therapy of medical diseases, an extensive description of the necessary outfit is given. At the same time the principles of dosimetry are expounded and the physical and biologic action of the rays are discussed in the light of our present knowledge. Roentgenization in the infant is discussed in a special chapter, and attention is called to peculiar points guiding the application of this modality. Children are prone to develop general x-ray intoxication. The erythema dose is somewhat lower than in adults. The juvenile glands are susceptible, and so-called intensive irradiation is prohibited in children. A closing chapter is devoted to the discussion of accidents and damage occurring during x-ray treatments, and their forensic qualification.

WHEAT FLOUR AND DIET. By C. O. Swanson, Ph.D., Professor and Head Department of Milling Industry, Kansas State Agricultural College. Cloth. Price, $2.50. Pp. 203, with illustrations. New York: Macmillan Company, 1928.

This timely volume comes to the defense of the uses and limitations of wheat flour as a food. It is pointed out that wheat flour constitutes 40 per cent of the total caloric needs and between 25 and 30 per cent of the annual protein requirements of the average individual in this country; but it cannot furnish a well rounded protein supply, the necessary mineral substances or vitamins, even if the whole wheat is used instead of milled wheat as at present. Man's diet must be supplemented by meats, milk and green vegetables. This book is directed to the lay reader and should prove very valuable because of the simplicity and clarity of its statements. A very short nontechnical description of wheat milling is included. At the close of the volume is a discussion of the vitamin deficiency diseases and the relation of wheat flour and other foods to these ailments.

HANDBUCH DER INNEREN SEKRETION. Eine umfassende Darstellung der Anatomie, Physiologie und Pathologie der endokrinen Drüsen. Herausgegeben von Dr. Max Hirsch. Lieferung 6. Band III. Paper. Price, 22 marks. Pp. 1489-1762. Leipzig: Curt Kabitzsch, 1928.

This section contains a large chapter on the pathology of internal secretions of the pancreas by Dr. M. Rosenberg of Berlin, and shorter chapters on the skin as an organ of internal secretion by Dr. L. Pulvermacher of Berlin; internal secretions and the eye by Drs. Szily and Poos of Münster, and finally a brief chapter by Professor Kranz of Munich on internal secretions and the teeth. Dr. Pulvermacher ranks the skin with the organs of internal secretion largely on the basis of the production of vitamin D in the skin under the influence of light, and also on the basis of some indications of detoxicating functions of the skin. This seems rather far fetched, especially since neither the production of vitamin D nor indications of the skin detoxication functions are specified. The chapter by Dr. Rosenberg is comprehensive and, on the whole, excellent except for the duplication of things already presented by the same author in volume II of the same work. The last two chapters deal primarily not with the question of either the eyes or the teeth as endocrine organs, but disturbances in vision and in the teeth resulting from endocrine disturbances and attempts to modify such disturbances by organotherapy.

GOITER PREVENTION AND THYROID PROTECTION. By Israel Bram, M.D., Medical Director, Bram Goiter Institute, Upland, Pa. Cloth. Price, $3.50 net. Pp. 327, with 13 illustrations. Philadelphia: F. A. Davis Company, 1928.

This volume, written primarily for the layman, discusses the functions of the thyroid gland and its diseases. Exophthalmic goiter is conceived to be a pluriglandular disease with involvement of the involuntary nervous system and distinct from other types of hyperthyroidism. The author does not subscribe to any definite factor in the etiology and prevention of goiter, yet such factors as individual susceptibility, diet, rest, sleep, exercise, water, smoking, focal infections and mental adjustment are given prominence, and chapters are devoted to a discussion of these subjects. In general, he is opposed to surgical intervention in the treatment of hyperthyroidism or exophthalmic goiter. While stating that surgeons are "fair and conscientious" in their conclusions as to the benefit to be derived from surgical intervention, he is of the opinion that they are not in the favored position of the endocrinologist to observe the final effects of such intervention. Among other statements, he lays a 20 per cent mortality at the hands of the surgeon. It is well known that subtotal thyroidectomy with the patient under iodine control at the hands of a competent surgeon carries with it a mortality of less than 1 per cent. The book is unscientific in that it does not contribute any fundamental facts to the goiter question, is prejudiced in the selection of observations, and is not modern in its point of view. It is difficult to see how the layman, for whom the book is avowedly written, can gain by reading it.

DIE NICHTVENERISCHEN GENITALERKRANKUNGEN. Ein Lehrbuch für Ärzte., Von Dr. Fritz Callomon, Arzt für Hautkranke in Dessau-Anhalt. Second edition. Paper. Price, 18 marks. Pp. 204, with 62 illustrations. Leipzig: Georg Thieme, 1928.

This monograph deals with the diseases of the genitals that are not brought about by sexual contact. An introductory chapter describes intertrigo, eczema, psoriasis, the various forms of lichen, and angioneurotic dermatitis. Lupus erythematodes, acne, impetigo, erysipelas, atheroma, xanthoma and anomalies of pigmentation are dealt with in a similar manner. The second chapter is devoted to the dermomycotic disorders around and on the genitals. Pruritus anogenitalis is dwelt on extensively. As the sovereign method of treatment the author recommends roentgenization. In condylomata acuminata of bulky appearance and extent over a large area, roentgen therapy as a rule is followed by good results. It has also the advantage of searching out excresences hidden in folds and recesses. Molluscum contagiosum is successfully handled with electrocoagulation. The modern theories concerning herpes are thoroughly discussed. The nonvenereal ulcerations at the genitals are divided into six groups: (1) ulcerations due to mechanical, thermic or chemical noxae; (2) acute bacteriogenic ulcers caused by the penetration of the cutis by pathogenic micro-organisms; (3) ulcerations as sequelae of the breaking down of the tissues in acute inflammatory conditions of the cutis and subcutis; (4) chronic infectious ulcers produced by the decay of granulations appearing during the course of general chronic infections; (5) ulcerations as a result of the retrogressive metamorphosis of neoplasms, and (6) chronic ulcerations produced by trophic deficiencies on account of persistent disturbances in the circulation. Phimosis, paraphimosis and balanitis are taken up in all the phases of etiology, clinical manifestations and therapy. The pertinent disorders of the vulva are systematically discussed, and particular stress is laid on their differentiation from syphilitic emanations. Nongonorrheal urethritis and the strictures of the urethra are given proper attention. Cavernitis and priapism are discussed. For the discussion of the nonvenereal diseases of the testis and epididymis Kocher's classification is accepted, which divides

these disorders into traumatic, urethral and metastatic groups. The neoplasms of the testis and epididymis, cryptorchidism, lymphopathy and elephantiasis of the scrotum and vulva are considered as usually. The illustrations are instructive, and the colored ones are especially impressive. This monograph may be considered a reliable guide for the practitioner.

KRAEMER'S SCIENTIFIC AND APPLIED PHARMACOGNOSY. Edited by Edwin L. Newcomb, Editor-in-Chief, P.D., Ph.D., Phar.D., Secretary, National Wholesale Druggists' Association. Co-editors Leasure K. Darbaker, Phar.D., Professor of Microscopy, Histological Pharmacognosy and Micro-biology, Pittsburgh College of Pharmacy, University of Pittsburgh; Earl B. Fischer, B.S., Professor of Pharmaceutical Botany and Pharmacognosy, College of Pharmacy, University of Minnesota, and Edmund N. Gathercoal, Ph.G., Professor of Pharmacognosy, School of Pharmacy, University of Illinois. Third edition. Cloth. Price, $7.50. Pp. 893, with 407 illustrations. New York: John Wiley & Sons, Inc., 1928.

This is a revision and extension, by a competent editorial board, of the late Dr. Kraemer's excellent and well known textbook. The guiding principles in this revision are stated in the preface: "In the light of newer discoveries it is becoming more and more evident that the study of the vegetable drug must begin with the germinating seed. The variations during different periods of growth and the preparation of the drug must be checked, and the effect of varying climatic conditions upon therapeutic quality observed. Nearly every vegetable drug must be restudied. The old method of basing research upon dried commercial drugs of unknown source, which had been subjected to the varying conditions of a dozen or more commercial channels, will no longer suffice. . . . It is not the function of the pharmacists to prescribe. But to carry out the direction of the physician, the pharmacist must know the dose of every drug." Under the items of doses and use the book follows the U. S. Pharmacopeia. This book is a credit to the American leaders in pharmacognosy.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

LABORATORY DIAGNOSIS AND EXPERIMENTAL METHODS IN TUBERCULOSIS. By Henry Stuart Willis, the Johns Hopkins University and Hospital. With a Chapter on Tuberculo-Complement Fixation. By J. Stanley Woolley, Loomis Sanatorium, Loomis, N. Y. Introduction by Allen K. Krause, the Johns Hopkins University. Cloth. Price, $3.50. Pp. 330, with 25 illustrations. Springfield, Ill.: Charles C. Thomas, 1928.

Well printed and well edited guide to laboratory technic in the clinical and research study of tuberculosis.

SYPHILIS: ACQUIRED AND HEREDOSYPHILIS. By Charles C. Dennie, B.S., M.D., Assistant Professor of Dermatology and Syphilology, University of Kansas School of Medicine. Harper's Medical Monographs. Cloth. Price, $2.50. Pp. 304, with illustrations. New York: Harper & Brothers, 1928.

First of a new series of monographs, well written and easy to read.

BACTERIOLOGY: GENERAL, PATHOLOGICAL AND INTESTINAL. By Arthur Isaac Kendall, B.S., Ph.D., Dr.P.H., Professor of Research Bacteriology in the Northwestern University Medical School. Third edition. Cloth. Price, $7 net. Pp. 733, with 111 illustrations. Philadelphia: Lea & Febiger, 1928.

New edition of a text by an author recognized as authoritative in bacteriology of the intestinal tract.

AN INDEX OF DIFFERENTIAL DIAGNOSIS OF MAIN SYMPTOMS. By Various Writers. Edited by Herbert French, C.B.E., M.A., M.D., Physician to H. M. Household. Fourth edition. Cloth. Price, $18. Pp. 1171, with 701 illustrations. New York: William Wood & Company, 1928.

New and fully revised edition of a valuable reference and desk guide to diagnosis.

BLOOD, A STUDY IN GENERAL PHYSIOLOGY. By Lawrence J Henderson, Professor of Biological Chemistry in Harvard University. Cloth. Price, $5. Pp. 397, with illustrations. New Haven: Yale University Press, 1928.

Silliman Lectures giving fundamental data concerning physiology of the blood.

PHYSICAL EDUCATION ACTIVITIES FOR HIGH SCHOOL GIRLS. By the Staff of the Department of Physical Education for Women, University of Michigan. Cloth. Price, $3.50 net. Pp. 322, with 54 illustrations. Philadelphia: Lea & Febiger, 1928.

Modern consideration of physical education for a special group.

CHARAKTER UND UMWELT. Von Hermann Hoffmann, a. ö. Professor für Psychiatrie u. Neurologie an der Universität-Tübingen. Paper. Price, 5.60 marks. Pp. 106. Berlin: Julius Springer, 1928.

A study of recent conceptions of man as a unit falling into various classifications.

THE DAILY HEALTH BUILDER. By C. Ward Crampton, M.D. Cloth. Price, $1.50. Pp. 161, with illustrations. New York: G. P. Putnam's Sons, 1928.

Exercise on the Pollyanna system with hurrah and enthusiasm.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Herausgegeben von W. Kolle, R. Kraus, und P. Uhlenhuth. Lieferung 23. Band III. Experimentelle specifische Diagnostik mittels Agglutination, Bakteriicidie (Lyse) und Komplementbindung. Von Prof. Dr. H. Sachs. Morphologie und Serologie des Normalblutes der Laboratoriumstiere. Von Dr. E. Jacobsthal, und Dr. A. Schuback. Die biologische Eiweissdifferenzierung mittels der Präcipitation mit besonderer Berücksichtigung der Technik. Von Prof. Dr. P. Uhlenhuth, und Prof. Dr. W. Seiffert. Die heterogenetischen Antigene, besonders die sog. Forssman-Antigene und ihre Antikörper. Von Prof. Dr. J. Forssman. Bakteriotherapie. Von Prof. Dr. C. Prausnitz. Third edition. Paper. Price, 27 marks. Pp. 193-548, with illustrations. Jena: Gustav Fischer, 1928.

DIAGNOSTISCHE UND THERAPEUTISCHE IRRTÜMER UND DEREN VERHÜTUNG: CHIRURGIE. Herausgegeben von Prof. Dr. J. Schwalbe. Geh. San.-Rat in Berlin. Heft 9: Zwerchfell, innere Hernien, Darmkanal (ausgenommen Duodenum, Appendizitis and Darmverschluss). Von Prof. Dr. E. Heller, Leitender Arzt der chirurgischen Abteilung der Krankenhauses St. Georg zu Leipzig. Magen, Duodenum. Von Prof. Dr. J. Hohlbaum, Oberarzt an der chirurgischen Universitätsklinik zu Leipzig. Darmverschluss. Von Prof. Dr. O. Kleinschmidt, Direktor der chirurgischen Abteilung des Städtischen Krankenhauses zu Wiesbaden. Paper. Price, 24 marks. Pp. 347, with 140 illustrations. Leipzig: Georg Thieme, 1928.

UROLOGICAL ROENTGENOLOGY. A Roentgen Atlas of the Genitourinary Tract with Case Histories and an Outline of Urology in Its Relations to Roentgenology. By Hugh H. Young, M.D., Clinical Professor of Urology, Johns Hopkins University, and Charles A. Waters, M.D., Instructor in Clinical Roentgenology, Johns Hopkins University. Assisted by Mary A. Goldthwaite. Volume VII. Annals of Roentgenology. A Series of Monographic Atlases. Edited by James T. Case, M.D. Cloth. Price, $20 net. Pp. 499, with 518 illustrations. New York: Paul B. Hoeber, Inc., 1928.

CRITERIA FOR THE CLASSIFICATION AND DIAGNOSIS OF HEART DISEASE. By a Committee, Joseph H. Bainton, M.D., Robert L. Levy, M.D., W. C. Munly, M.D., M.C., and Harold E. B. Pardee, M.D., Chairman. Appointed by the Heart Committee of the New York Tuberculosis and Health Association, Inc. Arranged in conformity with the nomenclature for cardiac diagnosis approved by the American Heart Association. Cloth. Price, $1.50 net. Pp. 92. New York: Paul B. Hoeber, Inc., 1928.

CHEMISTRY IN MEDICINE. A Cooperative Treatise Intended to Give Examples of Progress Made in Medicine with the Aid of Chemistry. Edited by Julius Stieglitz, Professor of Chemistry, University of Chicago. Advisory Editors: Anton J. Carlson, Reid Hunt, Frank R. Lillie, LaFayette B. Mendel, and H. Gideon Wells. Leather. Price, $2. Pp. 757, with illustrations. New York: Chemical Foundation, Inc., 1928.

A REPORT ON THE LEAGUE OF NATIONS INTERCHANGE OF HEALTH OFFICERS IN INDIA, 1ST JANUARY-18TH FEBRUARY, 1928. By A. L. Hoops, M.D., D.P.H., B.A., Principal Civil Medical Officer, Straits Settlements. Paper. Price, 5s. net. Pp. 80, with 2 illustrations. London: John Bale, Sons & Danielsson, Ltd., 1928.

MIKROSKOPISCHE ANATOMIE DES VEGETATIVEN NERVENSYSTEMS. Von Philipp Stöhr, Jr., o. ö. professor der Anatomie in Bonn. Paper. Price, 36 marks. Pp. 251, with 243 illustrations. Berlin: Julius Springer, 1928.

LABORATORY MANUAL OF THE MASSACHUSETTS GENERAL HOSPITAL. By Roy R. Wheeler, M.D., and F. T. Hunter, M. D. Second edition. Cloth. Price, $1.75 net. Pp. 101. Philadelphia: Lea & Febiger, 1928.

ORGANIZACIÓN DE LA LUCHA ANTITUBERCULOSA. Informe presentado al consejo nacional de administración. Enero de 1928. Por Dr. Joaquin Caldeyro. Paper. Pp. 64. Montevideo: El Siglo Illustrado, 1928.

DIE BEHANDLUNG DER AUGENKRANKHEITEN IN DER ALLGEMEINPRAXIS. Von Dr. Kurt Steindorff. Paper. Price, 5.80 marks. Pp. 124, with 18 illustrations. Leipzig: Georg Thieme, 1928.

ANNUAL REPORT OF THE PRESIDENT OF THE BOARD OF HEALTH OF THE TERRITORY OF HAWAII FOR THE FISCAL YEAR ENDING JUNE 30, 1927. Paper. Pp. 196. Hawaii, 1928.

THE STORY OF MAY DAY, 1924-1928. By Katherine Glover. Paper. Pp. 106, with illustrations. New York: American Child Health Association, 1928.

Medicolegal

Industrial Blindness Without Discoverable Pathologic Changes

(Valier Coal Co. v. Industrial Commission et al. (Ill.), 160 N. E. 212)

A fall of coal knocked a workman, Bodrero, down on his face, while he was working for the Valier Coal Company. Bodrero testified that the left side of his nose and left eye were injured and that he was injured also below the right eye; that dust and coal got into his eyes; and that his eyes were normal in all respects before the injury. The injury occurred, Jan. 7, 1925, and he returned to work, January 26. He worked until May 15, when he quit because he could not see to work. He testified that his eyes hurt him all the time and that he was compelled to wear large, colored glasses; that he could see very little light; that following the injury he started right away to lose his sight and the sight kept going a little at a time. The evidence was first heard by an arbitrator of the industrial commission of Illinois. A physician testifying for Bodrero said that on July 14 the vision in the right eye was 20/65 and in the left eye 20/200. On September 18, he found the vision in the right eye 20/100 and in the left 20/200. At the July examination he found a swollen nerve head in each eye, some hyperemic condition of some of the tissues, and some constriction of the blood vessels of the eyes. The September examination showed less swelling in the nerve head than before and the constricted blood vessels and other tissues of the eyes were apparently normal. He gave it as his opinion that trauma might well be considered the cause of the conditions he found. The physician for the employer testified that on Jan. 9, 1925, two days after the injury, he found lacerations about Bodrero's face, but there were no foreign bodies in the eyes, no inflammation in either eye, no scars on either eyeball, no evidence of hemorrhage in either eye, and nothing abnormal with the eyes. A physician specializing in the treatment of diseases of the eye testified that he examined Bodrero, July 17, that the vision in the right eye was 20/100, minus one, and in the left eye 20/200; that he found no pathologic changes in the eyes except that the optic disk appeared to be blurred, and that he found no cause at that time for any apparent loss of vision. He could not make a retinoscopic test because the claimant persisted in keeping his eyes closed tight. September 18, the vision in the left eye was 20/100 and in the right eye 20/70, but a retinoscopic examination was still impossible. All structures of the eyes appeared normal, except that the fundus was more hyperemic than normal. Bodrero was one of the worst patients he ever had for testing because he would not open his eyes, even in the darkroom. This witness did not find cause for any loss of vision in either eye. He did not find evidence of a swollen nerve head in either eye. He did not find evidence of optic atrophy in either eye, or evidence of hemorrhage.

The arbitrator, October 7, awarded Bodrero compensation at the rate of $17 a week for 250 weeks and thereafter a pension for life payable at the rate of $28.33 a month, on the finding that the injury he had sustained had caused "industrial blindness," rendering Bodrero wholly and permanently incapable of work. From the award of the arbitrator, the employer appealed to the industrial commission. The employer offered evidence of an examination by a physician specializing in diseases of the eye, Feb. 9, 1926. He testified that the claimant admitted a vision of 20/200 in each eye separately and would not admit any improvement by the use of glasses; that the interior of the eyes did not show any pathologic condition—at least anything to account for such reduced vision; that he attempted to make a subjective test, but could not get any cooperation or definite answers from Bodrero. From the examination, the witness was unable to determine the nature and extent of Bodrero's disability, on account of the absence of certain tests necessary to arrive at a definite diagnosis, which could not be made because the examiner could not get answers from Bodrero for certain important objective tests, although Bodrero understood the questions put to him. The nerve heads were slightly congested but did not show definite lesions, and such congestion would not tend to diminish vision unless there was inflammation. The witness was unable to determine whether there was inflammation. Bodrero, the witness said, acted like a blind man, either from simulation or from hysteria. If he had any loss of vision due to hysteria, the condition would not be permanent, the prognosis would be good, and the patient would recover his vision. Bodrero's condition might be due to malingering. The industrial commission, Oct. 5, 1926, affirmed the award of the arbitrator. By a writ of certiorari, the case was carried before the circuit court of Franklin County, and that court affirmed the decision of the industrial commission. By a writ of error, the case was taken before the supreme court of Illinois. That court found that the extent of Bodrero's injury was a controverted question of fact, as to which the evidence was sharply conflicting. There was evidence tending to show that prior to the accident his eyesight was good, and that his eyes troubled him continuously after the accident, until he became industrially blind. No witness testified to any trouble with Bodrero's eyes prior to the accident, and no lay witness gave evidence tending to disprove the claimant's claim of industrial blindness. The supreme court, therefore, could not say that the award was so manifestly contrary to the weight of the evidence as to be the result of passion, prejudice or a misconception of the case. The judgment of the circuit court was affirmed.

Witness Not Physician May Testify as to Mental Capacity

(State v. Madena (La.), 115 So. 661)

The defendant was indicted for murder. During the trial, a witness on his behalf, Chapman, was asked as to the mental condition of a witness for the state, Lewis, whom he had known for ten years. The state objected on the ground that the testimony was not admissible, since Chapman was not a physician or alienist and therefore could not testify as to any witness's mental capacity. The defendant expected to prove by Chapman that the state's witness was a half-wit. The court sustained the state's objection and excluded the testimony. The defendant appealed. The supreme court of Louisiana, in reversing the decision, held the general rule to be that the inference of a properly qualified, although unskilled, observer, as to the sanity or insanity of a person may be received. Where the issue is one of insanity and the opinion of a nonexpert witness is offered to prove insanity, before his opinion can be received in evidence the witness must testify to the specific facts on which his opinion is founded. But in this case Chapman's testimony was excluded on the sole ground that he was neither a physician nor an alienist. This was error. Judgment reversed.

Insane Delusions That Invalidate a Will

(Anlicker et al v. Brethorst et al (Ill.), 160 N. E. 197)

The testator's daughters contested his will because of his alleged mental incapacity. The trial court entered a decree against them, and they appealed to the supreme court of Illinois. The testator was nearly 90 years old when the will was made. His family physician, who had treated him for thirty years, testified that he attended the testator from March 10 to April 30, 1925, and found him suffering from chronic myocarditis, arteriosclerosis and thrombosis, causing senile dementia. He attended the testator at various times thereafter and testified that in his opinion the testator was not mentally sound during the last nine months of his life; but the report does not show the date of the testator's death. The will was executed, May 25, 1925. Seven other witnesses testified to facts tending to show that the testator was senile and suffering from insane delusions with respect to his daughters who were contesting the will. For the proponents of the will, thirteen witnesses testified to show that he was of sound mind and memory when the will was executed. After one of the witnesses for the proponents had testified on cross-examination that the testator seemed to be "a little roused up" when talking about his daughters kidnaping him and about making his will, he was asked whether the testator said anything about what he was going to do in his will about the daughters that he said had kidnapped him. An objection to this question, on behalf of the proponents of the will, was sustained by the trial court. The supreme court said, however, that the exclusion of this question was error, because if the kidnapping was a delusion it was important for

the contestants to know whether it caused the testator to discriminate against them. On behalf of the proponents, the court instructed the jury that if they believed from the evidence that the testator was of sound mind when he executed the will, it was immaterial what they believed as to his soundness of mind at any other time. The supreme court held that while the time of the execution of a will is the time at which to judge mental capacity, the instructions given would likely mislead the jury; for in determining the soundness of mind at the time the will is executed, it is important to know the mental condition a reasonable length of time before and after. The testator's illness was not temporary but was of gradual development, and at the exact moment the will was executed the contestants did not have access to him and could not show his mental state. Such an instruction as was given might be regarded by the jury as a direction to consider no evidence except that of the attesting witnesses. It should not have been given. The court refused to instruct the jury, at the request of the contestants, that even though the testator had sufficient business capacity, yet if he was of unsound mind with respect to the objects of his bounty and the disposition of his property, and labored under false delusion in that regard, then the will was invalid. But since the contestants contended that the testator entertained insane delusions toward them, the supreme court held that the nature of their case required that such an instruction be given. The trial court refused to give instructions asked for by the contestants, defining an insane delusion and to the effect that, if the testator entertained insane delusions concerning them, the will was void. The supreme court held that the refusal to give the instructions amounted to a withdrawal from the consideration of the jury of the question of mental incapacity by reason of insane delusions. The proponents of the will sought to justify the court's action in refusing the requested instructions on the ground that the contestant's bill of complaint contained no allegation that would justify it, but the supreme court said that it was not necessary for such a bill to name the particular kind of mental unsoundness. That was a matter of evidence that need not be alleged. It was claimed also that the instructions demanded too high a degree of capacity, in requiring that the testator have capacity to apprehend rationally the nature and effect of the act; but the law, the court said, required a testator to know what he was doing, what property he had, who were the natural objects of his bounty and what disposition he wanted to make of his property. That was all the instruction required, and it was error to refuse it. Because of conflict in the evidence and of error in the admission and exclusion of evidence and in giving and refusing instructions, the judgment of the trial court was reversed and the cause remanded for a new trial.

Damages for Future Disability Must Be Certain

(Shuck v. Keefe (Iowa), 218 N. W. 31)

Liability in damages was predicated on the alleged negligence of the defendant in the operation of his automobile. In her petition, the plaintiff alleged permanent injury to the right sacro-iliac articulation and about the pelvic region. The jury found in her favor, and the defendant, Keefe, appealed. The defendant contended that the trial court improperly submitted to the jury an issue of the plaintiff's permanent injury. The medical witnesses called by the defendant, including a roentgenologist, testified that in their opinion there were no injuries of a permanent character. The roentgenograms did not disclose anything that indicated any permanent injury to the right sacro-iliac articulation or any abnormalities about the pelvic region. A physician who examined the plaintiff about one month before the trial testified that he did not find anything that would indicate to him any permanent injury or abnormality in or about the parts of her body claimed by her to have been injured, and that in his opinion there was no probability of permanent injury. The plaintiff produced as a witness an osteopath who had last examined her about nine months before the trial, who testified that to undertake to say whether the plaintiff might or might not be permanently injured was in the realm of guesswork. The only testimony offered by the plaintiff was her purely subjective symptoms. There was no evidence by experts that corroborated her claim. There was no evidence as to whether the injuries were curable or incurable, or of the probable time it would take to effect a cure. The nature of her claim required that the plaintiff present proof of expert witnesses. The court quoted with approval the opinion of the court in *Shawnee-Tecumseh Traction Co.* v. *Griggs*, 50 Okla. 566, 151 P. 230:

> If this witness, skilled in the medical profession, with every opportunity of knowing all the facts relative to plaintiff's injuries, states that he did not know whether the injuries were permanent or not, it is certainly most unreasonable to require a jury to take indefinite and uncertain testimony, and therefrom to find that there was a reasonable certainty that plaintiff would or would not suffer future pain which was the clear and logical result of the injury.

For the reasons indicated and others, the judgment of the trial court was reversed.

Effect of an Award Under Workmen's Compensation Act on Liability for Malpractice

(Vatalaro v. Thomas (Mass.), 160 N. E. 269)

In opening his case in the trial court, the plaintiff's counsel said that the plaintiff sustained a hernia in the course of his employment; that the employer's insurer sent the plaintiff to a hospital, where the defendant, in operating on him for hernia, stitched the spermatic cord too tightly and so caused the left testis to atrophy. The plaintiff claimed that the operation was no part of the injury that he had sustained in the course of his employment but was a distinct injury for which the defendant was liable. At the suggestion of the judge, an official of the industrial accident board was called and was examined by the judge. He testified that the plaintiff had received compensation on the order of the board and later the board had approved an agreement by which the insurer's liability was extinguished by the payment of $250. On the plaintiff's opening and the testimony elicited by the judge, a verdict was directed for the defendant. The plaintiff appealed to the supreme judicial court of Massachusetts. The plaintiff's suit was based on alleged malpractice. He contended that it related to a different and independent cause of action and was not affected by the fact that he had received compensation under the workmen's compensation act. The laws of Massachusetts expressly provide that acceptance of payment by an employee, from an insurer, on account of personal injury, shall constitute a release to the insured of all claims and demands at law arising from such injury. If the defendant in the present case, in operating for hernia, stitched the spermatic cord too tightly, the cord being in the area of the hernia operation, the industrial accident board might have held that such lack of skill on his part was an act of negligence which, it might reasonably have been anticipated, would flow as a natural and probable consequence of the original injury. The case is governed by a well settled principle of common law, that in an action for personal injury a party may recover for injuries resulting from the defendant's negligence, even though such injuries are aggravated by the mistaken but honest treatment of a physician. In the opinion of a majority of the court, the acceptance by the plaintiff, under the workmen's compensation act, constituted the release to the insured of all claims and damages at law arising from the injury. Such release barred recovery by the plaintiff from the defendant. The plaintiff's exceptions were therefore overruled.

Society Proceedings

COMING MEETINGS

Clinical Orthopedic Society, Chicago, November 19-20. Dr. Robert V. Funston, 1337 David Whitney Building, Detroit, Secretary.

District of Columbia, Medical Society of, Washington, January 2. Dr. C. B. Conklin, 1718 M Street, N. W., Washington, Secretary.

Philippine Islands Medical Association, Manila, December 12-15. Dr. A. S. Fernando, 547 Calle Herran, Manila, Secretary.

Porto Rico, Medical Association of, San Juan, Dec. 1. Dr. M. Pavia Fernandez, Salvador Brau 51, San Juan, Secretary.

Radiological Society of North America, Chicago, December 3-7. Dr. Robert J. May, 5005 Euclid Avenue, Cleveland, Secretary.

Society of American Bacteriologists, Richmond, Va., December 27-29. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Southern Surgical Association, White Sulphur Springs, W. Va., December 11-13. Dr. R. L. Payne, Medical Arts Bldg., Norfolk, Va., Sec'y.

Western Surgical Association, Chicago, December 14-15. Dr. Harry P. Ritchie, 914 Lowry Building, St. Paul, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Medical Sciences, Philadelphia

176: 465-616 (Oct.) 1928

*Relation of Hypertension to Mitral Stenosis. S. A. Levine and M. N. Fulton, Boston.—p. 465.
*Effect of Tonsillectomy on Existing Cardiac Disease in Adults. W. B. Farnum, New York.—p. 474.
*Correlation of Electrocardiographic and Necropsy Findings. A. G. Markel and H. E. B. Pardee, New York.—p. 479.
*Fat Metabolism in Diabetes Mellitus. I. M. Rabinowitch, Montreal.—p. 489.
Surgical Complications of Diabetes. B. L. Coley, New York.—p. 491.
*Addison's Disease in Negro. L. S. Evans, Cleveland.—p. 499.
*Hyperthyroidism Without Visible or Palpable Goiter. J. Tucker, Cleveland.—p. 504.
*Importance of Diuresis in Treatment of Certain Cases of Mercuric Chloride Poisoning. J. M. Hayman, Jr., and J. T. Priestley, Philadelphia.—p. 510.
Significance of Afferent Impulses from Skin in Mechanism of Visceral Pain: Skin Infiltration as Useful Therapeutic Measure. S. Weiss and D. Davis, Boston.—p. 517.
*Autopsy: Importance and Availability. M. Warwick, St. Paul.—p. 536.
*Methods of Administering Acidophilus Organisms: Value of X and Y Strains. F. B. Lynch, Jr., Philadelphia.—p. 547.
Medical Problems in Diagnosis and Treatment of Cancer. L. F. Craver, New York.—p. 560.
Diaphragm Excursions, Normal and Pathologic. P. F. Butler and H. W. Dana, Boston.—p. 569.
*Basal Metabolism in Lymphoblastoma. C. I. Krantz, Boston.—p. 577.

Relation of Hypertension to Mitral Stenosis.—Analysis made by Levine and Fulton of 762 cases of mitral stenosis has shown that mitral stenosis of itself tends to induce a blood pressure slightly lower than normal. With advancing years patients with mitral stenosis have vascular hypertension with much greater frequency than the average population. Out of 159 patients with mitral stenosis over 45 years of age there were ninety-two with hypertension. Evidence is presented that the mitral stenosis found in older patients is not a part of the general sclerotic process alone but must be rheumatic in origin, as these patients have the same incidence of a previous history of rheumatic fever or chorea as do the younger patients. The authors feel that the unusual association of hypertension with mitral stenosis results from a particular vulnerability that these patients have both for the infectious and the degenerative types of vascular disease. There is some evidence from this study to show that vascular hypertension exercises a beneficial effect in cases of mitral stenosis. This beneficial effect can be explained on the basis that the increased load on the left ventricle as a result of the hypertension tends to keep this cavity dilated and to stretch the mitral ring and thereby to delay the contraction resulting from the mitral stenosis. It also tends to obviate the imbalance of the two ventricles.

Effect of Tonsillectomy on Heart Disease.—The result of tonsillectomy in a preexisting endocarditis was the particular feature of Farnum's study. Five hundred and twenty-six patients were followed for from two weeks to nine years. The ages at the time of admission were from 12 to 72 years. These patients knew of existing cardiac disease or had had subjective symptoms of heart disease for from two weeks to twenty-five years before admission. All patients reported gave definite evidence of endocarditis with the exception of twenty-eight suffering from myocardial changes severe enough to give symptoms of mild or severe decompensation. As etiologic factors in the production of cardiac infection, 295 gave a history of acute rheumatic polyarthritis, fifty-one of chorea and 275 of acute tonsillitis (several attacks), and sixty-two had positive Wassermann reactions. In this group of 526 patients, 180 had a tonsillectomy performed after coming under observation. Most of the operative procedures were done under general anesthesia (ether). This was the anesthetic of choice because the cardiac patients seemed to do best under ether anesthesia. Practically all these patients were given a longer rest than usual in bed after operation, and were seen by men doing cardiac work. A number were returned to medical wards after operation and, if necessary, remained hospitalized for a considerable period. Any flare-up of temperature, arthritis or symptom of decompensation, however mild, was given adequate consideration and treatment. These patients with few exceptions stood the shock of operation surprisingly well. Farnum found that tonsillectomy in the types of existing diseases of the heart mentioned should not be expected to arrest the progress of such disease to any marked degree. Tonsillectomy, although carried out under as nearly ideal conditions as may be obtained, will initiate an attack of acute rheumatic polyarthritis in a certain number of cases and further an actual spread of endocardial or myocardial infection. Tonsillectomy does not by any means stop the recurrence of sore throat. Such sore throats are oftentimes concomitant with acute rheumatic polyarthritis and the evidence of renewed cardiac involvement. Tonsillectomy in this group of cases does not seem to have a very great effect on the recurrence of chorea, as about 20 per cent recurred in both the tonsillectomized and the nontonsillectomized groups. Tonsillectomized patients decompensate with or without fever. It seems fair to Farnum to conclude from these facts that in adults with existing cardiac disease, the hope for improvement placed in tonsillectomy has been based on a shaky foundation. If tonsillectomy is to be generally used in the future as a definite therapeutic measure in cardiac disease, its best result will be obtained before the incidence of heart infection or very early in its course.

Correlation of Electrocardiographic and Necropsy Observations.—Markel and Pardee report two cases with microscopically normal muscle and no significant abnormality of the electrocardiogram, and bring forward evidence that the curve showing a notched Q-R-S with a slightly abnormal duration (0.12 second) and an abnormal T wave represents a definite microscopic abnormality, but one less severe than indicated by the curves of bundle branch block or intraventricular block.

Fat Metabolism in Diabetes Mellitus.—Rabinowitch reports a case of diabetes of two years' duration, during which time the patient was given about 80 units of insulin a day. He was admitted to the hospital in coma. The urine was characteristic, containing large amounts of sugar, acetone bodies, albumin and casts. The blood showed: urea nitrogen, 28 mm. per hundred cubic centimeters; blood sugar, 0.769 per cent; diazo color reaction for uremia, negative; cholesterol, 0.709 per cent. The consistency and the color of the blood suggested lipemia, and on standing it became evident that the fat content was very high. On analysis it was found to be 11.6 per cent. During the day there was occasional evidence of improvement, but in spite of the usual procedures, such as insulin and salines intravenously, and cardiac stimulants, the patient died at 10:20 p. m. The specimen obtained immediately post mortem showed a sugar content of 1 per cent, but the fat had decreased to 6.8 per cent. Therefore, again assuming that the patient had about 5 liters of blood (he weighed about 140 pounds), it will be noted that about 240 Gm. of fat left the circulation in less than twelve hours.

Addison's Disease in Negro.—Three cases of Addison's disease in the negro are reported by Evans, one with autopsy, and two in which there can be no doubt as to the diagnosis. The diagnosis is difficult in negroes on account of the natural pigmentation. Evans feels that Addison's disease is probably more common in negroes than is generally supposed.

Hyperthyroidism Without Palpable Goiter.—Tucker reports three cases of hyperthyroidism in which there was no visible or palpable goiter, and the correct diagnosis was consequently not suspected by several observers.

Importance of Diuresis in Mercuric Chloride Poisoning.—Hayman and Priestley saw their patient two hours after he had taken 37½ grains (2.4 Gm.) of mercuric chloride with suicidal intent. Lambert and Patterson's treatment was begun at once. After eighty hours of complete anuria, both kidneys were decapsulated and a small piece of renal cortex was removed

for section. A small amount of urine was recovered during the next twelve hours, and his general condition seemed much improved in spite of the fact that no urine was passed for the next two days. During the following two weeks urine volume ranged from 600 to 2,200 cc. a day, but the patient gradually became irrational and somewhat stuporous, and presented a rather typical uremic picture. The blood urea nitrogen had risen steadily, reaching a maximum of 247 mg. per hundred cubic centimeters twenty days after admission. At this time Lambert and Patterson's treatment was discontinued, and infusions of physiologic solution of sodium chloride were given. This induced an increased urinary output, with a prompt fall in the blood urea nitrogen and marked clinical improvement. He left the hospital against advice after six weeks, with a blood urea nitrogen of 85 mg. per hundred cubic centimeters, and no detectable phenolsulphonphthalein excretion in two hours. Five months later no evidence of impaired renal function could be detected.

Educating Public on Value of Autopsy.—In Warwick's opinion, the future of the autopsy is to be promoted by the education of the public through better autopsies performed by competent pathologists and with the observations reported back to those who are deeply concerned. Autopsies are necessary to the training of medical students and young physicians and to the development of medical science; they are of value in controlling and checking diagnosis, prognosis and therapeutics, and are of advantage to the family of the deceased. In the United States less than 1 per cent of autopsies is obtained, but this number may be materially increased by close cooperation between the hospital superintendent, the pathologist, the clinician and the undertaker. Through such cooperation much may be accomplished for the general public, the patient's family, the medical profession and the development of medical science.

Bacillus Acidophilus Therapy.—Acidophilus therapy, continued over a three months' period, does not seem to have produced any clear-cut effect on the number of convulsions in thirty-five cases of epilepsy, according to Lynch. The acidophilus treatment in these cases resulted in an increased number of defecations, whether the bacteria were given in milk or in blocks.

Basal Metabolism in Lymphoblastoma.—Krantz made a study of the basal metabolism in thirty cases of lymphoblastoma, exclusive of chronic lymphatic leukemia. The basal metabolism is usually elevated, not only in chronic lymphatic leukemia but also in other types of lymphoblastoma when the disease becomes widespread. The elevated basal metabolism, and the associated symptoms and untoward manifestations of lymphoblastoma may be reduced by the proper application of roentgen rays and radon. Leukopenia is not a contraindication to irradiation therapy in cases in which there is an increased basal metabolism. The basal metabolism is of value in the determination of therapy and prognosis in lymphoblastoma.

American Review of Tuberculosis, Baltimore

18: 373-522 (Oct.) 1928

Tuberculous Lesions in Lung of Negro Child Nine Weeks Old: I. Margin of Left Lower Lobe. W. S. Miller, Madison, Wis.—p. 373.
*Miliary Tuberculosis in Children. J. Greengard, Chicago.——p. 392.
*Incidence of Pleural Lesions as Shown by Roentgenograms in Children Known to Be Tuberculous. L. B. Dickey and L. H. Garland, San Francisco.—p. 404.
*Duration of Life in Pulmonary Tuberculosis with Cavity. H. L. Barnes and L. R. P. Barnes, Wallum Lake, R. I.—p. 412.
*Tuberculous Granuloma of Bronchus: Case: P. Schonwald, Seattle.—p. 425.
*Broncholithiasis: Case. B. P. Stivelman, New York.—p. 430.
Bronchial Irrigation. C. L. Wayman, St. Louis.—p. 435.
Pulmonary Sporotrichosis: Two Cases. J. J. Singer, St. Louis.—p. 438.
Combined Myxedema and Tuberculosis: Case. B. E. McGovern, Colorado Springs.—p. 444.
Acute and Chronic Anoxemic Cardiac Syndrome in Chronic Pulmonary Tuberculosis. I. Rappaport, Chestnut Hill, Pa.—p. 447.
*Vitamin Action of Preparations of Oleum Jecoris in Experimental Tuberculosis. G. Platonov, Moscow, Russia.—p. 458.
Acid-Fast Micro-Organisms: III. Reactions of Leukocytes of Guinea-Pig Following Inoculation with Human Tubercle Bacilli. W. Camp, and Others, Nashville, Tenn.—p. 462.
*Significance of Positive and Negative Sputum Findings in Pulmonary Tuberculosis. M. Pinner and W. I. Werner, Northville, Mich.—p. 490.
Immunologic Studies on Various Fractions of Tubercle Bacilli. M. Pinner, Northville, Mich.—p. 497.
Carbohydrate Content of Alcohol-Soluble Antigen of Tubercle Bacilli. K. Knowlton and M. Pinner, Northville, Mich.—p. 502.
Chemical Study of Bacteria: XXIII. Comparative Yields of Water-Soluble Protein and Carbohydrate from Tubercle Bacilli from Various Sources. T. B. Johnson and A. G. Renfrew, New Haven, Conn.—p. 505.
*Vernes Flocculation Test for Tuberculosis. A. B. Baylis, New York.—p. 513.

Miliary Tuberculosis in Childhood.—Of fifty-four cases of miliary tuberculosis in childhood reviewed by Greengard, a complete autopsy was made in thirty-five. Tuberculous meningitis occurred in 80 per cent of the cases seen at autopsy. Caseation of the tracheobronchial lymph nodes was universally present in this series. Caseous lesions within the lung tissue, which appeared to represent the primary nidus of infection, were noted in twenty-four cases and were unaccompanied by advanced tuberculosis of the gastro-intestinal tract in most instances. The occurrence of suppurative otitis media as a concomitant lesion of these cases was noted.

Pleural Lesions in Tuberculous Children.—In a series of chest roentgenograms of 327 children known to be tuberculous, and in a control series of fifty, a surprisingly high incidence of pleural lesions was demonstrated by Dickey and Garland. A high incidence is shown in the larger positive series for the 1 to 2 year age group, the age at which evidence of tuberculous pleurisy, at least, is considered to be very rare. Fifty-eight per cent of patients examined at this age showed pleural lesions roentgenologically. Histories of exposure (in the positive series) were not more frequent in those showing evidence of pleurisy; but all of the cases, six in number, giving histories of double exposure showed evidence of pleurisy. No relation could be shown between pleural lesions and enlargement of hilum lymph nodes. Pleural lesions in children with positive tuberculin tests were not more common than in those reacting negatively, except for the pleural effusions.

Duration of Life in Pulmonary Tuberculosis with Cavity.—Of the 1,454 patients reviewed by the Barneses, 1,244, or 85 per cent, are dead and the average duration of life was sixteen months in males and fourteen months in females. In patients with small cavities (from 1 to 2 cm.) there were about 50 per cent more survivors at the end of the first year than in those with large cavities (from 2 to 15 cm.), but 82 per cent of the patients with small cavities died within three years. Patients with well formed cavity walls or areas of calcification had a slightly longer duration of life.

Tuberculous Granuloma of Bronchus.—A case of tuberculosis is presented by Schonwald in which a tuberculous laryngitis and a granuloma in the mucosa of the right bronchus at the bifurcation developed after a spontaneous cure of tuberculous peritonitis. The laryngitis improved greatly, but the narrowing of the right bronchus caused stagnation of purulent material in the right lung, followed by atelectasis of the right lower lobe, the spread of the infection throughout the entire right lung, and finally spontaneous pneumothorax of the right upper lobe. The mucus, presenting almost a pure culture of tubercle bacilli, was of extreme viscosity, and its stagnation, after the pneumothorax had prevented cough, brought about asphyxiation.

Broncholithiasis with Many Stones.—Stivelman's patient was a stone grinder who had a bilateral fibroid phthisis and questionable silicosis. During his stay in the hospital, he spat up forty stones.

Vitamin Action of Oleum Jecoris in Tuberculosis.—Platonov asserts that the subcutaneous injection of oleum jecoris and its preparations produces a vitamin-like effect, the action of sodium morrhuate being greater than that of oleum jecoris. The effect of subcutaneous injections of oleum jecoris depends on the form and dose of the injections, and on the length of the intervals between them. When producing oleum jecoris preparations, care must be taken to avoid all factors that destroy the vitamin constituents of this oil, such as high temperature, sunlight and oxidation.

Value of Sputum Examinations in Tuberculosis.—In a study of more than 500 adult patients with active pulmonary tuberculosis, tubercle bacilli were found by Pinner and Werner in the sputum in more than 99 per cent. They state that the absence of tubercle bacilli in the sputum of patients with pulmonary tuberculosis almost always indicates healing. "Negative

sputum," in their opinion, has a much greater diagnostic and prognostic significance than is represented by the usual textbook teaching.

Value of Vernes' Flocculation Test in Tuberculosis.—The Vernes' flocculation test for tuberculosis was employed by Baylis in 250 cases, and found to be of great value, although by no means specific. The test is of even greater value as a guide in treatment, especially in regulating the mode of life in relatively quiescent cases.

Archives of Internal Medicine, Chicago

42: 455-610 (Oct.) 1928

Changes in Fundus Oculi as Definite Index to Arterial Disease: 100 Cases. S. A. Agatston, New York.—p. 455.
*Scleroderma and Calcinosis. R. H. Durham, Detroit.—p. 467.
*Behavior of Plasma Chlorides in Obstructive Jaundice. I. S. Ravdin and M. E. Morrison, Philadelphia.—p. 491.
Bronchomoniliasis: Case from Porto Rico. W. R. Galbreath and C. Weiss, Porto Rico.—p. 500.
Scapulae of Chinese. H. D. Kerr, Catonsville, Md.—p. 508.
*Electrocardiogram in Hypertension. T. Ziskin, Minneapolis.—p. 512.
Ulceration of Esophagus. J. Friedenwald, M. Feldman and W. F. Zinn, Baltimore.—p. 521.
*Palm Color Test for Diagnosis of Anemia and Plethora. W. W. Duke, Kansas City, Mo.—p. 533.
*Parathyroids: Relationship to Thyroid: Hyperthyroidism. E. P. McCullagh, Cleveland.—p. 546.
Pancreatic Function: II. Pancreatic Activity in Diabetes Mellitus. S. Okada and Others, Tokyo, Japan.—p. 560.
Prevention of Experimental Exudates by Parathyroid Hormone (Collip). H. Gold, New York.—p. 576.
*Continued Administration of Iodide and Other Salts: Comparative Effects on Weight and Growth of Body. P. J. Hanzlik, E. P. Talbot and E. E. Gibson, San Francisco.—p. 579.
*Inheritance of Migraine. W. Allan, Charlotte, N. C.—p. 590.
*Effect of Administration of Medicinal Iron on Iron Reserve. C. S. Williamson and P. Ewing, Chicago.—p. 600.

Scleroderma and Calcinosis.—Fourteen cases of calcinosis associated with scleroderma or sclerodactylia have been collected by Durham and added to the nine cases reported in 1911. In four of the eight cases of scleroderma and calcinosis, there was an accompanying sclerodactylia. In three cases of sclerodactylia with calcinosis, there was no recognizable scleroderma. That the combination of scleroderma and calcinosis constitutes a distinct pathologic entity, despite the infrequent occurrence, is suggested by the usual location of the calcinosis, by the fairly characteristic type of deposit and by the close local relationship of the two conditions (deposits usually in areas of scleroderma). It is nowise clear whether calcinosis with scleroderma results from local metabolic alterations or deranged inorganic metabolism. As in other types of pathologic calcification, the colloidal proteins are thought to play a prominent rôle.

Plasma Chlorides in Obstructive Jaundice.—Data are presented by Ravdin and Morrison concerning the chloride metabolism after ligation of the common duct (group 1), cholecystectomy and ligation of the common duct (group 2), and cholecystectomy alone (group 3). In groups 1 and 3, depression of plasma chlorides was not found. In group 2, a reduction in the plasma chlorides occurred, varying in degree but consistently present whenever ligation was complete and the gallbladder out of the circuit.

Electrocardiogram in Hypertension.—Ziskin says that the electrocardiogram per se does not give any definite information as to the effect of hypertension on the heart until a myocardial degeneration has taken place. The interval after which this occurs cannot be determined clinically. Left ventricular preponderance is not always present in hypertensive heart disease. It was noted in only 44 per cent of this series. Left ventricular hypertrophy, while a factor in causing left ventricular preponderance, is not a determining factor. The frequency of left ventricular preponderance tends to increase as the enlargement of the heart increases to a moderate degree, and then tends to decrease when the heart becomes markedly enlarged. There is no definite relationship between the comparative enlargement of the right and the left side of the heart, as indicated by the M R : M L ratio (median left and median right diameters) and left ventricular preponderance. The tendency to left ventricular preponderance is greater, however, in the group showing an M R : M L ratio under 50 per cent. The duration of the existence of hypertension does not have a bearing on left ventricular preponderance. Hypertension alone does not produce preponderance. In fact, the tendency is the other way; the higher the blood pressure, the less likelihood of left ventricular preponderance. The condition of the myocardium as shown by other electrocardiographic changes does not influence the production of left ventricular preponderance. Other factors besides those enumerated, and at present unknown, are involved in the production of left ventricular preponderance.

Palm Color Test for Diagnosis of Anemia and Plethora.—Duke is of the opinion that a slight or marked grade of either anemia or plethora can be diagnosed most readily through a comparison of the color of the palm of the hand of the patient with that of a proved normal person according to a simple technic which has been described. He has found after a large experience that the color of the palm is influenced by few conditions except anemia and plethora, and that from a comparison of the patient's palm with that of a normal person, one can demonstrate slight deviations from the optimum in the quantity of hemoglobin in the general circulation. Comparison of the palm of the patient's hand with that of a normal person during and after blood transfusion and during and after venous section is a most reliable guide when one wishes to decide whether or not an adequate amount of blood has been introduced or withdrawn. If the foregoing statements are true, anemia and plethora in slight grade are common conditions.

Relation of Parathyroids to Thyroid.—McCullagh has not found anything to indicate an abnormal functioning of the parathyroid glands in either hypothyroidism or hyperthyroidism except in cases in which there has been actual trauma or removal of these glands. He has not found any indication for the use of parathyroid hormone in cases of hyperthyroidism.

Prolonged Use of Iodide Not Detrimental.—From the experiments made by Hanzlik et al., there is no reason to believe that the prolonged use of iodide in small doses under ordinary conditions is detrimental. On the contrary, the results along various lines indicate that it is beneficial. This would not apply to the continued use of iodide in specific conditions of the thyroid, or to large doses of the drug.

Inheritance of Migraine.—Allan has reviewed 500 cases of migraine. In fifty-six families in which both parents were migrainous and in which there were 318 children, 240 had migraine, forty-eight did not and in thirty the history was not known or the children were too young, giving a positive figure of 83.3 per cent. In 141 families in which one parent was migrainous and one not and in which there were 750 children, 342 had migraine and 217 did not; in 191, the history was not known or the children were too young. This gives a positive figure of 61 per cent. In ninety-nine families in which one parent was migrainous and the history of one was unknown and in which there were 517 children, 266 were migrainous, 153 were not and in 152 the history was not known. This gives a positive figure of 63.4 per cent. If one combines these two groups one has 240 families in which it was known that one parent had migraine. Of the 978 children about whom data were available, 62 per cent had migraine. In ninety-eight families, with 485 children, in which neither one of the parents had migraine, eighteen, or 3.7 per cent, had migraine. A history of migraine in one or both parents was given in 349 (91.4 per cent) of 382 migrainous patients. Data on both parents were obtained from 243 patients, and in sixty-three instances (26 per cent) both parents were said to have migraine. A history of migraine in one parent but not in the other was given in 147 (60 per cent) of 243 migrainous patients. A history of migraine in neither parent was given in thirty-three (8.6 per cent) of 382 migrainous patients. In the families of 376 migrainous patients containing 2,105 children, 658 siblings had migraine, 504 did not have it, and in 567 the history was not known or the children were too young. This gives an incidence of 67.2 per cent of the 1,538 children about whom data were available. In 163 family histories given by children who did not have headache themselves, ninety, or 11.8 per cent, of a total of 911 children were said to have migraine, 722 were said to be without migraine, and in ninety-nine the history was not known.

Effect of Administration of Medicinal Iron.—According to Williamson and Ewing, rats fed on the standard diet plus ferric citrate do not show an increase in the concentration of hemoglobin over rats on the same diet minus ferric citrate. After

25 per cent of the volume of blood has been withdrawn, rats which have been fed ferric citrate in addition to the standard diet for a long time before bleeding do not recover any more quickly than the control group which has not been given ferric citrate. Expressed in other words, the addition of ferric citrate to the diet of rats cannot build up a reserve of available iron; that is, of iron susceptible of being converted into hemoglobin. This last result is in striking contrast to the results of the author's previous work, wherein it was shown that the feeding of food iron under the same conditions resulted in the storing up of approximately 30 per cent of reserve iron, which was immediately utilizable after a strain on the body, as, for example, after hemorrhage.

Arkansas M. Society Journal, Little Rock

25: 93-113 (Oct.) 1928

Treatment of Cleft Lip and Cleft Palate. F. W. Carruthers, Little Rock.—p. 93.
Maxillary and Sphenoidal Sinusitis. R. Caldwell, Little Rock.—p. 97.
*Case of Injury to Glottis. H. H. Rightor, Helena.—p. 101.
Paranasal Sinus Infection in Children. E. C. Mitchell, Memphis, Tenn.—p. 102.

Inspiration of Lemon Drop Injures Glottis.—Rightor relates the case of a boy who was playing in the street with a lemon drop in his mouth. He laughed out loud and was immediately seized with great dyspnea and cyanosis. His grandmother, realizing what had happened, ran her finger as far as she could back into his throat in the hope of getting the candy out. Instead of getting it out she evidently pushed it through the vocal cords into the trachea, as he was immediately relieved. In a half hour, however, his breathing again became very difficult. When Rightor first saw him he was drenched with sweat, deeply cyanosed and scarcely able to breathe. Intubation was done without delay. In a few hours a cough and a rising temperature developed. Examination of the chest revealed widespread moist râles. Six hours after the insertion of the tube, the boy removed it by pulling on the cord which was attached to it. He then breathed easily for about thirty minutes without the tube. His respirations again became very labored. The tube was easily inserted again, and relief resulted. In twelve hours the tube was removed and he breathed well for two hours, when it had to be replaced, for the third time. It was allowed to remain six hours this time and after its removal there was no more difficulty or obstruction to respiration. The child, however, had a typical, well marked case of lobular pneumonia as a result of the insufflation of the melted lemon drop. This ran its usual course.

California and Western Medicine, San Francisco

29: 217-288 (Oct.) 1928

Rocky Mountain Spotted Fever, Tularemia and Rodent Plague. J. C. Perry, San Francisco.—p. 217.
Emotional Influence on Gastro-Intestinal Tract. H. E. Ruggles, San Francisco.—p. 221.
Psychiatry in Action. R. L. Richards, San Francisco.—p. 223.
Diaphragmatic Hernia: Three Cases. W. E. Hunter, Salt Lake City.—p. 227.
Commoner Surgical Diseases of Rectum: Treatment. M. S. Woolf, San Francisco.—p. 232.
Rattlesnake Bite: Two Fatal Cases. J. F. Doughty, Tracy.—p. 237.
*Tuberculous Infection: Incidence in Children of Oriental Parentage. L. B. Dickey, San Francisco.—p. 241.
*Gold and Sodium Thiosulphate in Treatment of Lupus Erythematosus. H. E. Miller, San Francisco.—p. 243.
*Spinal Anesthesia: Use of Ephedrine. H. G. Holder, San Diego.—p. 246.
*Tuberculin Fractions Prepared from Nonprotein Culture Mediums. F. Eberson and E. Wolff, San Francisco.—p. 250.
Industrial Physician: His Relation to Patient and Carrier. J. Eaves, San Francisco.—p. 254.
Lure of Medical History: Claude Bernard. J. Oliver, San Francisco.—p. 258.
Inguinal Hernias Containing Fallopian Tubes: Case. A. Weeks and G. D. Delprat, San Francisco.—p. 259.
Nonopaque Foreign Body in Bronchus: Case. J. B. Bullitt, San Jose.—p. 262.
Aplastic Anemia Due to Benzol Poisoning: Two Cases. J. M. Askey, Los Angeles.—p. 262.

Incidence of Tuberculosis in Orientals.—In a series of 119 children of various ages up to 14, all of oriental parentage, examined by Dickey, there was an incidence of tuberculous infection, as revealed by intracutaneous tuberculin tests, of 35.3 per cent. The incidence for Chinese children was 31.5 per cent; for Japanese, 38.5 per cent. While both of these figures are definitely above the 25.2 per cent of infection of the child population at large for the same city, it must be remembered that the mortality rate from tuberculosis among the Chinese in San Francisco is four and one-half times that of the rest of the city, and probably for the Japanese is about the same. Hence the incidence of tuberculous infection reported among children of oriental parentage is lower than might have been anticipated.

Treatment of Lupus.—Sixty per cent of fifty-three patients with lupus erythematosus treated by Miller with gold and sodium thiosulphate are clinically well. Thirty per cent are markedly improved and will probably become cured under further treatment. Patients with lupus vulgaris, erythema induratum and papulonecrotic tuberculids are improved, but the condition has not entirely cleared after a rather prolonged use of the drug. Only three of the fifty-three patients had reactions.

Spinal Anesthesia with Ephedrine.—One hundred and fifty-one cases of spinal anesthesia are reported by Holder with no morbidity or mortality, and only one failure. Subjective and objective symptoms and sensations during the anesthetic occurred in about 3 per cent of cases. There were no post-anesthetic sequelae other than headache, which occurred in 1.9 per cent of cases, in one lasting more than twenty-four hours. Approximately one half of the series received ephedrine. In those given 100 mg. or more of procaine without ephedrine, there was an average blood pressure drop of 37.5 mm., while those receiving ephedrine had an average drop of 12.8 mm.

Tuberculin Reactions with Tuberculin Fractions.—Three hundred and forty-six tuberculous and nontuberculous patients, ranging in age from 7 months to 16 years, have been studied by Eberson and Wolff, with a view to comparing tuberculin reactions with specially prepared fractions of tuberculin. The cases have been divided into various groups to test more rigorously the diagnostic value of the tuberculin fractions. To this end, borderline groups presenting unusual difficulty in diagnosis were selected. Stress was laid particularly on healed infections. The chief differences in the reactions in those cases pointed to lesser reactivity on the part of tuberculin fractions in latent conditions in which old tuberculin gave moderate or marked reactions. The results indicate that a diagnosis of healed tuberculous cervical adenitis or of a healed primary focus cannot be made with certainty in the absence of a definitely marked positive reaction to old tuberculin. Tuberculin fractions did not give negative tests when old tuberculin was positive in cases showing symptoms that might be considered as those of tuberculous activity. In all the cases in which tuberculin fraction gave reactions equal to those with old tuberculin when it showed medium or strong tests, or in cases in which the fraction gave medium to strong reactions and old tuberculin at the same time gave weak to doubtful results, symptoms and signs were present in the history that might have been attributable to tuberculous activity. From detailed analyses of the different tuberculous and nontuberculous groups presented, it can be concluded that the tuberculin fraction gives better results than old tuberculin, and is more selective as a clinical test.

Illinois Medical Journal, Oak Park

54: 249-324 (Oct.) 1928

Carcinoma of Large Intestine Including Rectum. I. Abell, Louisville, Ky.—p. 263.
Artificial Pneumothorax with High Intrapleural Pressure in Patients with Pleural Adhesions. R. W. Dunham, Ottawa.—p. 267.
Abuse of Cesarean Section. P. W. Toombs, Memphis, Tenn.—p. 273.
Relations Which Should Exist Between Medical Profession and Public Health Officials and Workers. S. W. Welch, Montgomery, Ala.—p. 279.
Transplantation of Hamstring Tendons Forward to Patella for Paralysis of Quadriceps Extensor. R. O. Ritter, Chicago.—p. 284.
Arthritis. J. A. Macgregor, London, Ont.—p. 287.
Diagnosis of Pulmonary Tuberculosis. R. T. Pettit, Ottawa.—p. 293.
Heliotherapy: Limitations in Pediatrics. L. W. Sauer, Evanston.—p. 296.
Prevention of Puerperal Infections. H. F. Langhorst, Elmhurst.—p. 298.
Lipoid Nephrosis. W. H. Holmes, Chicago.—p. 300.
Applied Railway Sanitation. S. C. Beach, Chicago.—p. 304.
Fundamental Biologic Factors Evidenced in Mental Mechanisms of Human Machine. F. P. Norbury, Jacksonville.—p. 309.
Everyday Uses of Radium. A. J. Larkin, Chicago.—p. 315.
Paranasal Sinus Infection in Infants and Children. S. M. Morwitz, Chicago.—p. 317.
McKinley Test for Epidemic (Lethargic) Encephalitis. H. S. Hulbert, Chicago.—p. 321.

Indiana State M. Association Journal, Fort Wayne

21: 427-468 (Oct.) 1928

End-Results in Surgical Treatment of Gallbladder Disease. M. N. Hadley, Indianapolis.—p. 428.
Abdominal Diagnosis and Urologist. D. N. Eisendrath, Chicago.—p. 431.
Why Physical Therapy Fails. E. Libbert, Lawrenceburg.—p. 436.
Decorative Reform in Physician's Office. G. Craig, Indianapolis.—p. 438.

Iowa State M. Society Journal, Des Moines

18: 379-416 (Oct.) 1928

Heart Disease. F. A. Willius, Rochester, Minn.—p. 379.
Heart in Arteriosclerosis. W. W. Hamburger, Chicago.—p. 385.
Undulant (Malta) Fever: Clinical Aspects of Cases Which Have Occurred in Iowa. A. V. Hardy, Iowa City.—p. 387.
Infectious Mononucleosis Coexisting with Mastoiditis. A. J. Joynt, Waterloo.—p. 393.

Journal of Immunology, Baltimore

13: 395-506 (Sept.) 1928

*Susceptibility of Eskimos to Common Cold: Their Natural Immunity to Diphtheria, Scarlet Fever and Bacterial Filtrates. P. Heinbecker and E. I. M. Irvine-Jones, St. Louis.—p. 395.
*Blood Grouping of Baffin Island Eskimos. P. Heinbecker, St. Louis, and R. H. Pauli, New York.—p. 407.
Studies on Antigenic Properties of Ultraviruses: IV. Antigenic Properties of Herpes Virus. E. W. Schultz and J. Hoyt, Stanford University, Calif.—p. 411.
Antihemolytic Action of Hemolytic Immune Serums. M. Yanagihashi, Sendai, Japan.—p. 421.
Primary Toxicity of Goat Serum. J. D. Aronson, Philadelphia.—p. 465.
General and Local Immunity to Chlorine Botulinum Toxin. M. Nevin and E. L. Hazen, New York.—p. 489.

Susceptibility of Eskimos to Colds.—During a trip up the west coast of Greenland, Heinbecker and Irvine-Jones noted that in certain of the settlements every native was the victim of an acute respiratory tract infection, while in others no evidence of such infection was present. Investigation revealed that in the former some contact had invariably been made with the outside world prior to their coming; while in the latter group, within from forty-eight to seventy-two hours of their arrival, all the natives developed acute respiratory infections with sneezing, coughing and spitting. Farther north, among the polar Eskimos, where it was certain that no outside contact had been made that year, there was never the slightest evidence of acute respiratory tract infections at the time of the arrival of the expedition, but within seventy-two hours nearly every Eskimo of the settlement developed such an infection. Ordinary bacterial infections rarely occur. Diphtheria and scarlet fever are unknown clinically, and in a group of about fifty subjects all were negative to the Dick test and all the adults were also Schick negative. Children up to the age of 12 years were invariably Schick positive. Three serums were found to contain antitoxin both for diphtheria and scarlet fever. It is therefore concluded that the immunity to the disease and the negative skin tests depend on the presence of antitoxin. This is interpreted as being due to a natural hereditary immunity dependent on some nonspecific antitoxin mechanism. Skin reactions with filtrates of streptococci isolated from cases of rheumatic fever were mildly positive in a small percentage of cases. Neutralizing antitoxin was demonstrated in all three serums but it was not invariably present for all three toxins. The Eskimos showed a high percentage of positive reactions when tested with a *Staphylococcus aureus* filtrate.

Blood Grouping of Eskimos.—The blood grouping made by Heinbecker and Pauli of 166 Eskimos of Baffin Island showed that the pure blooded Eskimo falls into blood group I.

Journal of Laboratory & Clin. Medicine, St. Louis

14: 1-102 (Oct.) 1928

*Therapeutic Use of Bacteriophage of Suppurative Conditions: Fifty Cases. T. B. Rice and V. K. Harvey, Indianapolis.—p. 1.
Some Color Reactions of Morphine and Its Derivatives on Heating in Concentrated Sulphuric Acid Solution. C. C. Fulton, Omaha.—p. 13.
Diseases of Mouth. S. V. Mead, Washington, D. C.—p. 30.
Parathyroid Extract and Glucose Tolerance in Diabetes Mellitus. M. Wishnofsky and J. M. Frankel, New York.—p. 34.
New Iodo Derivatives of Phthaleins. F. R. Greenbaum, Philadelphia.—p. 39.
Gingivitis: II. Clinical Appearance of Gingivae in Different Forms and Stages. R. A. Keilty, Washington, D. C.—p. 48.
Case Showing Unusual Wassermann Reactions. J. J. Short and M. F. Kelley, New York.—p. 55.
Use of Posters as Method of Instruction in Diabetic Clinic. J. R. Williams and M. Vye, Rochester, N. Y.—p. 57.
New Aldehyde Reagent. R. D. Barnard, Chicago.—p. 62.
Douche and Shower and Special Cabinet for Gastro-Intestinal Tubes. M. Einhorn, New York.—p. 64.
*Clinical Value of Spinal Fluid Test of Takata and Ara. B. L. Monias, Chicago.—p. 67.
Critique of Lipase "Picture" Method. K. G. Falk, H. M. Noyes and K. Sugiura, New York.—p. 71.
Control Tests of Haldane Chamber Apparatus in Metabolic Study of Adult Alcoholized Poultry. T. M. Carpenter, Boston.—p. 73.
Lamp for Colorimeter or Microscope. H. A. Davenport, Chicago.—p. 80.

Therapeutic Use of Bacteriophage of Suppurating Conditions.—Bacteriophage filtrates active for autogenous cultures have been used by Rice and Harvey in a series of fifty suppurative conditions and have been found to be highly effective against *Staphylococcus aureus* and *S. albus, B. coli* and *B. pyocyaneus*. They have been found most effective when used as a wet dressing or when instilled into a cavity. There is considerable evidence that stock cultures of the bacteriophage may be used with profit when time and facilities for the preparation of the autogenous product are lacking, or while it is in preparation. This is particularly true of the staphylococcus preparations.

Clinical Value of Spinal Fluid Test of Takata and Ara.—Monias has used the Takata-Ara test in connection with the other spinal fluid reactions in more than a hundred spinal fluids, and the results have been very satisfactory. It compares favorably with the Lange colloidal gold reaction. In tabes dorsalis the test is less sensitive than the Lange reaction. The test does not call for special technical skill or for special glasswares and triple distilled water. It can easily be performed in small laboratories or in the office. The Takata-Ara test is based on the formation in normal spinal fluids of colloidal mercuric oxide when mercuric chloride and sodium carbonate or sodium hydroxide are added. Fuchsin serves as an indicator and stains the fluid a bluish violet. Pathologic spinal fluids produce either a precipitation of the mercury with absorption of the dye or a change of the color to purple or pink. The flocculation is characteristic of syphilis while the change of color is observed in bacterial meningitis.

Journal of Preventive Medicine, Chicago

2: 345-440 (Sept.) 1928

*Decline of Infectious Diseases in Relation to Modern Medicine. T. Smith, Princeton, N. J.—p. 345.
*Mussel Poisoning. K. F. Meyer, H. Sommer and P. Schoenholz, San Francisco.—p. 365.
*Precipitin Test in Intestinal Schistosomiasis (S. Mansoni). W. H. Taliaferro, W. A. Hoffman and D. H. Cook, Chicago.—p. 395.
Malaria in Uncontrolled Hyperendemic Area (Hule, Palestine): I. Seasonal Prevalence, Distribution and Intensity of Malaria in Untreated Indigenous Population. I. J. Kligler and R. Reitler, Jerusalem.—p. 415.
Id.: II. Changes in Resting Places of Anopheles: Infected Mosquitoes. I. J. Kligler and E. Liebman, Jerusalem.—p. 433.

Decline of Infectious Diseases in Relation to Modern Medicine—Smith believes that medical practice is the study and care of the individual, but that medical science is rather a study of the race and therefore a study primarily of disease itself. The race can be studied only through its individuals, but science must focus first of all on the disease process rather than on the immediate relief of the individual. Medical science, as one of its tasks, needs to study disease comparatively as well as experimentally and not limit itself to one species, as this is a barren process beyond a certain stage. In fact, the progress of medical science today depends almost wholly on animal life. To materialize this plan in the study of infectious and parasitic diseases, it will be necessary to exploit all spontaneous animal diseases, to study the disease of the individual in all its forms, the effect on the population as a whole and the rise, decline and modifications of the virus, and eventually to make a comparative study of similar diseases in different species. It will be highly desirable to investigate the diseases of untouched animal populations that are closely associated with men in more or less primitive conditions, for our own domesticated species, both useful and noxious, are under the influence of our civilization, which makes research almost as difficult as that in human beings, but for very different reasons. It is obvious that the research laboratory must play a large part in such a natural history study of disease, but it must subordinate its analytic tendencies to the broader view of the whole and assist in the comparative study. Its results will then serve as problems to be further analyzed by a more refined technic. Smith believes

that coming generations will see established research stations in hitherto only partially explored territories, where living conditions will be created to make research not only possible but remunerative to medical science, and where all forms of disease in various species will be objects of research.

Mussel Poisoning.—Meyer et al. analyze the cases of mussel poisoning occurring in California in 1927 and describe the clinical history of the disease and its treatment. It seems that there are poisonous and nonpoisonous mussels. The symptoms of poisoning are primarily peripheral paralysis which may vary from a slight tingling and numbness about the lips to a complete loss of power in the muscles of the extremities and neck, and to death by respiratory failure. In a moderately severe case of tingling, the stinging sensation around the lips, gums and tongue would develop in from five to thirty minutes after the consumption of the mussels. This was regularly followed by numbness or a prickly feeling in the finger tips and toes, and within from four to six hours the same sensation would progress to the arms, legs and neck, so that voluntary movements, as for example, raising of the head, were made only with great difficulty. In all cases of moderate severity this ataxic weakness and stiffness of locomotion was accompanied by a peculiar feeling of lightness. Some patients declared that they felt as if they were floating or could fly. Even heavy objects appeared to them very light. The reflexes were normal and active. It is stated that in one of the fatal cases the deep reflexes were affected. The mentality remained clear although dizziness and staggering were noted in some, and drowsiness was observed in three of the fatal cases. A few patients complained of a gripping sensation around the throat and slight respiratory distress. Incoherence of speech was noted in one of the fatal cases. Vomiting was inconstant, while diarrhea and abdominal pain were not recorded in the untreated cases. In fact, a tendency to constipation persisted for several days. Records of the carefully controlled cases showed the average temperature to be slightly subnormal (mean 98 F.). The pulse was firm and slightly accelerated (from 80 to 100 a minute). During recovery some patients had chilly sensations in their limbs and for a number of days felt slightly stupefied and were easily fatigued. The blood and urine were normal. With the exception of six fatal cases, recovery was uneventful and complete. The longest period from the time of consumption till death was ten hours and the shortest, three hours; the length of the period was apparently independent of the amount of mussels consumed. The raw mollusks were just as potent as the cooked. However, there are indications that those who decanted the liquid from the steamed or cooked shellfish before eating them suffered less than those who partook freely of the broth. Since the mussel poison is readily soluble in water, these observations indicate that probably a considerable portion of the injurious substance was extracted and discarded. Equally interesting is the fact that the intoxications were mild or failed to develop in those who consumed the shellfish in conjunction with a heavy meal or boiled the mollusks with rice and garlic or mixed them with olive oil. Laboratory experiments indicate that delayed gastric absorption favors the destruction of the poison. When the shellfish were taken into an empty stomach, the intoxication rate was very high; every member of the group showed symptoms of varying degrees of severity. As soon as the condition was recognized, emptying of the stomach by an emetic and purging by brisk laxative was the usual practice. In most of the cases this was sufficient. However, in the severe cases, although the stomach was emptied, a fatal dose of the poison had already been absorbed. Certain cases of paralytic mussel poisoning have such a rapid course that they are not amenable to any therapeutic procedure, and it is questionable whether recovery would have been successful if the six fatal cases had been treated earlier. In any event, aside from washing the stomach, stimulants in the form of aromatic spirit of ammonia or black coffee should be used. As soon as dyspnea sets in, artificial respiration should be begun.

Precipitin Test in Intestinal Schistosomiasis.—Aqueous extracts made by Taliaferro et al. by extracting dried livers of snails (*Planorbis guadeloupensis*) containing larval stages of *Schistosoma mansoni* (1 cc. of extractive to 0.025 Gm. of powder) with the slightly alkaline solution of coca, saline or phenol, yield specific test antigens. Seventy-seven precipitin tests on the serums of twenty-eight persons with stools positive for *S. mansoni* gave sixty-three positive and fourteen negative tests; twenty-four tests on five persons known to be negative for both *S. mansoni* and syphilis gave one positive and twenty-three negative tests; seventeen tests on four persons negative for *S. mansoni* but positive for syphilis gave nine positive and eight negative reactions. The active principle in these aqueous extracts is precipitated with the albumin fraction; i. e., it is not precipitated with half saturation with ammonium sulphate, but is precipitated with entire saturation. Antigens prepared from lipoid-free powders of normal uninfected snail "livers" gave uniformly negative reactions with schistosomal serums.

Medical Journal and Record, New York

128: 377-436 (Oct. 17) 1928

Ulcerative Colitis Treated by Flushing of Colon with Intestinal Tube by Oral Route. M. Einhorn, New York.—p. 377.
Dementia Praecox Complexes. J. R. Ernst, Detroit.—p. 381.
Intestinal (Protein) Intoxication: III. Treatment. H. J. Bartle, Philadelphia.—p. 386.
Operative Treatment of Hallux Valgus. M. B. Cooperman, Philadelphia.—p. 389.
Fissure in Ano: How Produced: Examination and Treatment. C. C. Franken, New York.—p. 393.
Prerheumatic Child. C. W. Vining, Leeds, England.—p. 395.
Hyperemesis Gravidarum. D. H. Bessesen, Minneapolis.—p. 399.
Actinomycosis of Ovary and Fallopian Tube. A. Stein, New York.—p. 401.
Ectopic Pregnancy. B. Mann, Philadelphia.—p. 406.
Gynecologic Findings in Mental Patients. J. A. Jackson and I. Ashenhurst, Danville, Pa.—p. 409.
Common Female Pelvic Pathology: Means of Treatment. H. F. Strongin, New York.—p. 412.
Ovarian Cyst with Twisted Pedicle: Case. A. N. Bessesen, Jr., and D. H. Bessesen, Minneapolis.—p. 414.
Treatment of Hernia by Subcutaneous Injection. I. Mayer, Detroit.—p. 415.
Toothache and Its Treatment. R. Williams, Toronto.—p. 419.

New England J. Medicine, Boston

199: 703-754 (Oct. 11) 1928

Surgery of Gallbladder. J. F. Erdmann, New York.—p. 703.
Surgery of Bile Ducts. F. H. Lahey, Boston.—p. 707.
Sequelae and Accidents of Biliary Surgery. E. S. Judd, Rochester, Minn.—p. 712.
Relation Between Gallbladder Disease and Pancreatitis. D. F. Jones, Boston.—p. 716.
Disease of Gallbladder and Bile Passages. F. W. White, Boston.—p. 719.
*Thallium Acetate in Ringworm of Scalp. B. Appel, Boston.—p. 733.

199: 755-800 (Oct. 18) 1928

Bronchoscopy. C. Jackson, Phiadelphia.—p. 759.
Trend in Legal Forms Used in Admitting Patients to Danvers State Hospital: Résumé of 6,749 Discharges Over Ten-Year Period, 1917-1926. N. A. Dayton and H. H. Dolan, Boston.—p. 764.
Fistula an Etiologic Factor in Rectal Carcinoma. S. M. Fitchet, Boston.—p. 766.
Nursing and Maternal Welfare. S. Rushmore, Boston.—p. 768.
Diagnostic Value of Cholecystography. F. T. Lord, Boston.—p. 773.
Effect of Lateral Posture in Examination of Chest. H. W. Dana, Boston.—p. 774.
Education of Public: Cults. T. J. O'Brien, Boston.—p. 777.

Thallium Acetate in Ringworm of Scalp.—Appel regards the administration of thallium acetate in the proper dosage, to selected children before the age of puberty, as being the best method of epilation in cases of ringworm of the scalp. The seven patients reported received 8.5 mg. per kilogram of body weight. The technic of administration is very simple. The exact weight of the child is determined. Then the amount of thallium acetate is carefully weighed out, dissolved in about half a glass of sweetened water and given to the child to drink. None of the solution must be left and, if the child is frightened or otherwise refractory, he must be prevented from spilling any. Because an interval of at least two months should elapse before the dose is repeated, one should carefully guard against an accident of this sort. The amount of drug used is fairly sharply determined; there is, however, a variance in the actual dose used by different men from 7 to 9 mg. per kilogram of body weight. Hair starts coming out usually in from nine to fourteen days and is totally out in about three weeks. It starts growing in again in from two to four weeks. It is necessary to continue fairly active local fungicidal treatment during the entire period. Appel's patients received an ointment consisting of salicylic acid, one-half drachm (2 Gm.), precipitated sulphur, 1 drachm (4 Gm.), and petrolatum or boric ointment to make 1 ounce (31 Gm.). This was ordered rubbed into the scalp thoroughly, morning and night.

New York Lying-In Hospital Bulletin, New York

13: 179-280 (Aug.) 1928

Anatomic Basis for Study of Splanchnoptosis: Abdominal Walls at Term. A. C. Vietor, Boston.—p. 179.
Cesarean Section. W. B. Hendry, Toronto.—p. 201.
Obstetric Analgesia. A. B. Davis, New York.—p. 227.
Safeguarding Health of Expectant Mother. L. A. Wing, New York.—p. 234.
Pregnancy and Some of Its Complications. A. B. Davis, New York.—p. 237.
Unengaged Head in Primaparous Labors in Normal Pelves at Term: Progress of Labor and Results in 173 Such Cases. J. A. Harrar, New York.—p. 250.
Accidental Hemorrhage. L. A. Wing, New York.—p. 254.

New York State J. Medicine, New York

28: 2005-2068 (Oct. 15) 1928

Morals of Medicine. H. R. Trick, Buffalo.—p. 2005.
Placenta Accreta: Seven Cases. D. L. Jackson, Boston.—p. 2007.
Bilateral Suppurative Mastoiditis Without Physical Findings of Middle Ear or Mastoid Disease. B. Welt, New York.—p. 2011.
Acute Abdominal Tragedies. E. C. Brenner, New York.—p. 2012.
Poliomyelitis: Forty-Six Cases. O. C. Perkins, New York.—p. 2015.
Relationship of Orthopedics to Practice of Pediatrics. C. Ogilvy, New York.—p. 2017.
Gas Gangrene in Civil Surgery: Value of Serum Treatment. A. M. Dickinson and C. A. Traver, Albany.—p. 2020.
Gonorrheal Iritis. M. L. Lerner, Rochester.—p. 2025.

Public Health Reports, Washington, D. C.

43: 2645-2712 (Oct. 12) 1928

Fumigation with Cyanogen Products. C. V. Akin and G. C. Sherrard.—p. 2647.

43: 2713-2816 (Oct. 19) 1928

Health Studies of Negro Children: II. Physical Status of Urban Negro Child: Study of 5,170 Negro School Children in Atlanta, Ga. E. B. Sterling, Washington, D. C.—p. 2713.

Southwestern Medicine, Phoenix, Ariz.

12: 383-430 (Sept.) 1928

Cancer Problem. J. F. Percy, Los Angeles.—p. 383.
Food Sensitization. O. H. Brown, Phoenix.—p. 388.
Injuries to Abdominal Viscera. H. D. Ketcherside, Yuma.—p. 394.
Fractures. J. M. Greer, Phoenix.—p. 396.
Id.: Of Femur: Case. H. W. Rice, Morenci.—p. 398.
Acute Intestinal Obstruction. E. P. Palmer, Phoenix.—p. 402.
Brain Abscess with Recovery: Case. J. J. McLoone, Phoenix.—p. 406.
Multiple Aneurysms of Basilar Artery with Rupture: Case. S. H. Newman, El Paso, Texas.—p. 408.
Problem of Epidermophytosis. N. Tobias, St. Louis.—p. 408.
Public Health Administration in New Mexico. J. A. Tobey, New York.—p. 410.

12: 431-482 (Oct.) 1928

Public Health Measures in Poliomyelitis. G. S. Luckett, Santa Fe, N. M.—p. 431.
Contribution of Psychiatry to Medicine. C. W. Thompson, Pueblo, Colo.—p. 434.
Management of Squint in Children. F. P. Schuster and S. A. Schuster, El Paso, Texas.—p. 437.
Treatment After Hemorrhoidectomy. W. R. Jamieson, El Paso, Texas.—p. 439.
Skin Diseases Observed in Natives of Tropics. R. W. Mendelson, Albuquerque, N. M.—p. 440.
Opportunities for Postgraduate Study in Vienna. F. H. Crail, East Las Vegas, N. M.—p. 443.
Clinic of Heart Disease. D. Luten, St. Louis.—p. 446.
Human Tongue and Edema. O. S. Fowler, Denver.—p. 450.

Tennessee State M. Association Journal, Nashville

21: 207-246 (Oct.) 1928

Acute Respiratory Infections. A. L. Rule, Knoxville.—p. 207.
Treatment of Intertrochanteric Fractures in Aged. A. H. Meyer, Memphis.—p. 212.
Toxic and Reflex Symptoms in Diseases of Upper Respiratory Tract in Children. J. L. Hobson, Memphis.—p. 217.
Some Policies and Plans of Tennessee State Department of Public Health. E. L. Bishop, Nashville.—p. 221.
Management of Malignancies In and Around Oral Cavity. C. R. Crutchfield, Nashville.—p. 223.

Wisconsin Medical Journal, Milwaukee

27: 439-480 (Oct.) 1928

Hypertension. J. J. McGovern, Milwaukee.—p. 439.
Appendix: Ruptured and Appendiceal Abscess: Ninety-Two Cases. H. C. Miller, Racine.—p. 449.
Bunions. J. W. Powers, Milwaukee.—p. 452.
Diagnostic Problems. L. M. Warfield, Milwaukee.—p. 453.
Chorea Complicating Pregnancy: Case. E. J. Stone and M. Markson, Milwaukee.—p. 454.
Appendicitis: Rupture: Drainage. W. J. Tucker, Ashland.—p. 455.
After Diagnosis, What? F. I. Drake, Milwaukee.—p. 457.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 555-592 (Sept. 29) 1928

Bacterial Flora of Intestine in Health and in Chronic Disease. J. Cruickshank.—p. 555.
*Kala-Azar and Oriental Sore: Transmission. C. M. Wenyon.—p. 558.
Chronic Ethmoiditis. R. H. Skillern.—p. 562.
Conservative and Surgical Treatment of Chronic Ethmoiditis. W. Howarth.—p. 565.
*Heredity of Dementia Praecox. W. S. J. Shaw.—p. 566.
*Autotransfusion: Case. H. B. Devine and V. J. Kinsella.—p. 568.
Traumatic Asphyxia. A. G. Coullie.—p. 569.
Polyserositis in Later Life. B. G. Edelston.—p. 570.
Total Concealed Accidental Hemorrhage Simulating Ovarian Tumor. L. W. Roberts.—p. 570.
Use of Clover's Inhaler in Tonsillectomy and Removal of Adenoids. C. J. Symonds.—p. 581.

Transmission of Kala-Azar and Oriental Sore.—Wenyon says that if the sand-fly is not the transmitter of the leishmania infections of man, the solution of the problem is as remote as it ever was. The remarkably intense infection produced in this insect is difficult to regard as an accident, and the mass of experimental evidence is in favor of the view that both kala-azar and oriental sore are transmitted by species of *Phlebotomus*.

Heredity of Dementia Praecox.—Shaw's experience with the peculiar incidence of dementia praecox among the Parsees of Bombay compels him to the opinion that inbreeding is a very definite cause of the disease. The Parsees constitute a small and very clearly differentiated group in the Indian population, and among them intermarriage with outsiders and proselytism are strongly discouraged.

Autotransfusion.—Devine and Kinsella report the case of a boy who fell from a balcony to the pavement beneath. He was perfectly conscious, although he had a very local fissured fracture of the skull and both bones of each forearm were broken. His pulse rate was slow. The abdomen was soft and not tender. The fractures of his forearms were reduced. A few hours later signs of severe intra-abdominal hemorrhage definitely showed themselves. The hemorrhage came on insidiously, because its early signs were doubtful and obscured by the other injuries and the anesthesia. The abdomen was opened, and found to be full of fluid blood containing a few clots; this was quickly ladled out and dropped into the citrate solution. Meantime a vein had been opened, and reinfusion of the citrated blood was begun, even while the blood was being removed from the abdomen. The source of the bleeding was found to be a tear near the pedicle of the spleen. The abdominal wall showed no sign of trauma, the injury having been inflicted apparently in some indirect way. The bleeding appeared to stop as the transfusion was given, and gauze packing was gently introduced over the tear. The patient became quite warm, his color improved and the pulse became easily palpable. The abdomen was closed and the patient returned to bed. No reaction followed, and convalescence was rapid and uneventful.

Journal of Laryngology & Otology, Edinburgh

43: 689-768 (Oct.) 1928

Histopathology of Mastoiditis. J. P. Stewart.—p. 689.
Mastoid Surgery in Childhood: Record of Fifty Consecutive Operations, with Note on Value of Fat-Grafting. D. Guthrie.—p. 713.
*Bacteriologic Examination of Tonsils in Special Cases. R. B. Lumsden.—p. 724.
Case of Spherical Bulging of Floor of Third Ventricle, Secondary to Internal Hydrocephalus and Simulating a Pituitary Tumor. R. G. Brown.—p. 728.

Bacteriologic Examination of Tonsils. — Lumsden endeavors to show that tonsillar infection is a factor in the causation of gallbladder disease. Out of twenty-three cases of tonsillar infection so far investigated by him, eighteen have shown a growth of nonhemolytic streptococcus, and more than half of these have given pure growths. Staphylococcus has been the next commonest organism obtained, while the *Bacillus coli* group has been conspicuous by its rarity, as have also hemolytic streptococci. In two cases pure growths of staphylococci have been obtained, and in other two, *Bacillus coli* only has been found. In no case was a pure hemolytic streptococcus obtained. So far the tonsils of three patients with

definite cholecystitis have been investigated. The streptococci from each of these were injected into rabbits, and in all of the rabbits so far examined there is some change in the gallbladder.

Journal of Obst. & Gynec. of Brit. Empire, Manchester

35: 461-660 (Autumn) 1928

*Cystoscopy in Carcinoma of Cervix. A. A. Gemmell.—p. 465.
*Mixed Tumors of Uterus and Vagina. W. Shaw.—p. 498.
Cervical Fibroids Invading the Vesicovaginal Septum. J. P. Maxwell and S. Lee.—p. 514.
*Double Uterus. H. De Sa.—p. 522.
Case of Obstructed Labor Due to Carcinoma of Sigmoid Colon. H. H. Evers.—p. 525.

Value of Cystoscopy in Carcinoma of Cervix.—Gemmell discusses the relationship of cystoscopy to operability in cases of carcinoma of the cervix. In clinically inoperable cases cystoscopy is unnecessary, but in clinically borderline cases cystoscopy is of great value and may be the deciding factor. All cases judged operable should be submitted to cystoscopy to ensure that there is no extension in an anterior direction which has escaped detection on bimanual examination. Early transverse ridging is the cystoscopic picture which denotes the limit of operability. Bulging of the bladder wall is mechanical only. Circulatory changes are a part of the pelvic hyperemia associated with the disease. Bullous edema is due to actual invasion of the bladder wall by the malignant disease, or its very near approach thereto. The appearance of the ureteric orifices is of no value as a guide to the difficulties likely to be encountered in the dissection of the ureters. The cystoscopic appearances are also a factor in estimating prognosis.

Mixed Tumors of Uterus and Vagina.—Shaw asserts that the grapelike sarcoma of the cervix usually contains striated muscle cells and cartilage, and should be included under the term "mixed tumors." The average age of the patients who develop this disease is 34. It does not occur typically before puberty or after the menopause. Its malignancy is extremely high. Similar "mixed tumors" arise in the body of the uterus, but they are rare. They develop after the menopause. Some of the vaginal sarcomas of children belong to this group. The "mixed tumors" contain heterologous tissues; striated embryonic muscle cells, cartilage, fat, bone and elastic tissue have been found in them, in addition to sarcoma cells. There is no satisfactory explanation of their origin.

Double Uterus with One Vagina.—In the case reported by De Sa there were two uteri, both equally developed to the size of a normal uterus, in a woman who had given birth to children, with a round ligament, a broad ligament and an ovary attached to each of them. The rectovesical peritoneal fold formed a screen and covered the square surface between the two uterine bodies. The uniform size and appearance of both uterine bodies was strongly suggestive of alternate impregnation. Only one wholly normal cervix existed, however. Into it opened the two internal ora.

Lancet, London

2: 687-738 (Oct. 6) 1928

Hydrocephalus: Study in Phylogeny and Pathology. J. Bland-Sutton.—p. 687.
*Value of Immune Serums in Prophylaxis of Measles. W. Gunn.—p. 690.
*Action of Oxytocin and Vasopressin on Uterus in Labor. A. W. Bourne and J. H. Burn.—p. 694.
Action of Postpituitary Principles on Blood. F. R. Curtis and J. W. Pickering.—p. 695.
Infective Endocarditis Due to Streptococcus Mutans: Case. G. F. Abercrombie and W. M. Scott.—p. 697.
Three Cases of Deaths Under Anesthesia. J. R. Mackenzie and T. Shennan.—p. 699.
Pneumococcal Meningitis: Case with Recovery. C. R. Croft.—p. 700.
Outbreak Suggesting Epidemic Jaundice. W. S. R. Thomas.—p. 701.

Prophylaxis of Measles; Value of Immune Serums.—Gunn states that until an animal serum more efficient than those used in his investigation is available convalescent serum must remain the only certain method of controlling the disease. The results of its employment justify a wider recognition of its value, and its application in public health administration generally.

Action of Oxytocin and Vasopressin on Uterus in Labor.—The action of oxytocin and vasopressin, the separated constituents of pituitary extract, has been determined by Bourne and Burn on the human uterus in labor by a method which enables a graphic record of intra-uterine pressure to be taken. They state that oxytocin possesses the typical stimulant action, whereas vasopressin has no effect, even in large dose. A given dose of oxytocin (2 units) produces a large response in one patient, a small one in another. Their experience with it confirms their previous conclusion that a dose of 2 units will, as a rule, produce a useful effect if administered when the os is at least half dilated. Oxytocin may safely be used by those who have refrained from using pituitary extract because of the danger of shock.

Practitioner, London

121: 137-204 (Sept.) 1928

Cancer of Stomach. B. Moynihan.—p. 137.
*Prevention and Treatment of Tuberculosis by Immunizing Vaccine. N. Raw.—p. 149.
Some Ocular Manifestations of Cardiovascular Disease, Excluding Renal Complications. A. M. Ramsay.—p. 154.
Treatment of Lupus Vulgaris. W. J. O'Donovan.—p. 170.
Essentials of Septum Operations. M. Yearsley.—p. 178.
Diagnosis and Treatment of Chronic Intestinal Stasis in Children. A. Graham-Stewart.—p. 183.
Diagnosis and Treatment of Ectopic Gestations Which End in Spurious Labor. C. Noon.—p. 191.

Prevention of Tuberculosis by Immunizing Vaccine.—With the object of preventing tuberculosis in dairy cows and thereby reducing the surgical tuberculosis in children caused by infected milk, Raw has been engaged during the last five years in immunizing calves shortly after birth by giving them two injections of vaccine from human bacilli, the first one week after birth, and the second one week later. The results are excellent, and the immunity lasts at least two years and probably longer. In a very large experience in the treatment of patients suffering from tuberculosis in its varying stages, Raw has used tuberculin in more than 2,000 hospital cases. He attributes the generally unfavorable results to the fact that the tuberculin was obtained from virulent cultures of human bacilli. The reactions produced in some cases were disturbing, and probably were due to overdosage. This is entirely obviated by using attenuated bovine cultures, which never produce reactions if given in correct and graduated doses. In early infections, the vaccine seems to produce sufficient active immunity to enable the tissues to produce sufficient antibody to deal with the infection, and, what is of greater importance, to limit the spread of the disease in the organ affected. Raw says that a case of pulmonary tuberculosis should be treated by a vaccine prepared from bovine bacilli, and a case of surgical tuberculosis by a vaccine prepared from human bacilli. The dosage should be carefully graduated, and a course of treatment should consist of twelve weekly injections, the maximum dose being 0.01 mg. In no case are any reactions produced.

Archives de Médecine des Enfants, Paris

31: 581-644 (Oct.) 1928

*Cerebriform Aspect of Cranium in Roentgenogram. P. Nobécourt, J. Haguenau and P. R. Bize.—p. 581.
Care of Psychically Abnormal Child. G. Heuyer and Serin.—p. 595.
*Hereditary Craniofacial Dysostosis. E. Apert and Bach.—p. 605.
Oxycephalia. E. Apert and E. Bach.—p. 607.
*Thyroid Treatment of Facial Edema. E. Apert and Bach.—p. 611.

Cerebriform Appearance of Cranium in Roentgenograms of Cases of Brain Tumor in Children.—Nobécourt et al. describe nine cases of brain tumor in seven of which the surface topography of the brain was reproduced in the cranium in roentgenograms. Two fundamental characteristics enable one to make a definite diagnosis of cerebriform appearance of the cranium: (1) the external table of the cranium is never involved, the modifications consisting simply in variations in the thickness of the internal table; (2) the outlines of the lighter areas form regular undulations. In all probability these roentgen images are due to the impressions of the cerebral convolutions on the cranium and represent merely the exaggeration of a process which in the normal person is insufficient to give special roentgen images. The authors believe that the cerebriform appearance of the cranium constitutes an almost constant roentgen sign in tumors of the brain in children. This appearance is not pathognomonic of cerebral tumor; it is found also in cases of hydrocephalus and cranial malformations of the group of dysostoses. It is merely a symptom of intracranial hypertension and is therefore of value in the differential diagnosis of

the syndromes of cranial hypertension in general or of cerebral neoplasms in particular.

Hereditary Craniofacial Dysostosis.—Apert and Bach describe a case of craniofacial dysostosis and congenital dislocation of the hip in a girl, aged 2½; a sister and a maternal aunt were also found to have craniofacial dysostosis.

Cure of Facial Edema in Child by Thyroid Treatment.—A case of facial and palpebral edema in a girl, aged 3, without any signs or symptoms of renal disease, is reported by Apert and Bach; the edema disappeared each time that thyroid treatment was begun but always reappeared shortly after the treatment was stopped.

Nourrisson, Paris

16: 257-340 (Sept.) 1928

*Buttermilk in Infant Feeding. A. B. Marfan and M. Chevalley.—p. 257.
Popularization of Breast Feeding. P. Lereboullet.—p. 267.
Agenesis of Abdominal Muscles. Taillens.—p. 291.
Infantile Acrodynia. R. Turquety.—p. 297.
*Systematic Percussion of Cranium in Infants. A. F. Canelli.—p. 313.

Superiority of Buttermilk over Acidified Milk in the Feeding of Debilitated and Hypothreptic Infants.—Marfan and Chevalley believe that buttermilk is the best food for debilitated and hypothreptic infants who cannot be suckled and who do not tolerate ordinary cow's milk. Buttermilk makes a very satisfactory food for new-born infants by reason of: (1) its low fat content; (2) the changes which are produced in the casein during the preparatory fermentation, which render it more digestible. The good results obtained with buttermilk are not due to the presence of the lactic acid, which is, however, useful during the fermentation because of the fact that it favors the partial predigestion of casein. After the buttermilk has been prepared, however, experience shows that it is even advantageous to decrease its acidity by adding a certain amount of lime water (at least one fifth). Eleven case reports are given as evidence that for the feeding of debilitated and hypothreptic infants buttermilk is superior to ordinary whole or diluted cow's milk to which a certain amount of lactic acid is added.

Systematic Percussion of the Cranium in Infants.—Owing to the fact that the infant's cranium presents the first clinical signs of several diseases, particularly hydrocephalus and rickets, Canelli recommends its systematic percussion in all infants up to 1 year; any method of percussion may be used and all the topographic lines should be followed.

Presse Médicale, Paris

36: 1217-1232 (Sept. 26) 1928

*Hydatid Cysts of Liver. H. Constantini.—p. 1217.
Treatment of Pulmonary Tuberculosis with Gold Salts. A. Farjon, P. Maizilly and P. Lefèvre.—p. 1218.
*Bilirubin and Cholesterol Content of Blood in Primary Splenomegaly. Benhamou, Gille and Jude.—p. 1220.
Senile Nanism. C. P. Waldorp and E. B. del Castillo.—p. 1221.
*Painful Syndrome Following Ligation of Large Arteries. R. Leriche.—p. 1223.
*Local Vaccination in Treatment of Gonorrhea. Aitoff.—p. 1224.

Treatment of Hydatid Cysts of Liver Communicating with Biliary Passages.—Constantini discusses the advantages of drainage of the bile tract as recommended by the French school and of incision and evacuation of the cyst as recommended by the South American school. He himself prefers incision of the cyst to choledochotomy because it permits not only the evacuation of the contents of the cyst but also the relief of stasis in the bile tract. Regardless of whether incision of the cyst or choledochotomy is first practiced, a complementary intervention may be performed on the bile ducts after incision of the cyst and on the cyst itself after choledochotomy. As a rule, however, this second stage is unnecessary.

Bilirubin and Cholesterol Content of Blood in Primary Splenomegaly.—In fourteen cases of primary splenomegaly, Benhamou et al. noted hyperbilirubinemia and hypercholesteremia. They consider these two conditions so characteristic that they hesitate to make a diagnosis of primary splenomegaly unless they are present. The hyperbilirubinemia and hypercholesteremia are also of value in following the course of the disease.

Painful Syndrome Following Ligation of Large Arteries.—Leriche describes a case in which ligation of the brachial artery was followed a long time afterward by painful cramps in the flexors and pronators every time the hand was used. The muscles had regained their former volume and the pulse was feebly perceptible. When the arm was raised above the patient's head, however, and the muscles were compressed, the arm became smaller and atrophy of the muscles was noted. When the arm was replaced alongside the body, the muscles regained their former caliber. The author demonstrated experimentally in 1922 that following the ligation of a large artery the circulation is reestablished largely by the dilatation of the intramuscular anastomoses. As time passes the peripheral circulation improves as a result of these newly formed vessels, which finally become so developed that the muscles on the involved side may become even larger than the ones on the opposite side. But when this adaptation of the circulation becomes maximum, the muscular contractions compressing the vascular sponges may produce a painful cramp. Obviously any attempt to correct this condition would only make it worse: sympathectomy, for example, would increase the pain by increasing the peripheral vasodilatation.

Local Vaccination in the Treatment of Gonorrhea in Women.—In twenty-six cases of gonorrhea in women, Aitoff noted sixteen cures (after from three to six weeks of treatment), six ameliorations, and four failures following local vaccination according to Besredka's method.

36: 1233-1248 (Sept. 29) 1928

Vagotonia and Alkalosis. Laignel-Lavastine.—p. 1233.
*Kidney in Malignant Endocarditis Lenta. P. Le Noir and P. Baize.—p. 1234.
*Prognosis of Chronic Nephritis. A. Dias.—p. 1236.
Anorectal Abscesses and Fistulas. C. Chiricesco.—p. 1238.

Renal Lesions in Malignant Endocarditis Lenta.—According to Le Noir and Baize four types of renal lesions may be found at necropsy in patients who die of malignant endocarditis lenta: (1) infarcts, a common finding; (2) the lesions of localized, embolic nephritis, almost constant; (3) the changes of diffuse nephritis, in rarer cases; (4) the lesions of cardiac kidney. Each anatomic variety corresponds approximately to a distinct clinical form. It should be remembered that aside from microscopic or macroscopic hematuria and albuminuria, which constitute the almost constant renal sign of malignant endocarditis lenta, there occur forms in which the renal element dominates the evolution of the disease and frequently even masks it to the point that primary acute or subacute nephritis is simulated. These renal forms of malignant endocarditis lenta, rare but not exceptional, should always be kept in mind, because of the possibility of errors in diagnosis and particularly in prognosis.

Prognosis of Chronic Nephritis.—Dias makes the following suggestions with regard to the prognostic significance of blood urea determinations in chronic nephritis: 1. A single urea determination is valueless; therefore a series of determinations should be made. 2. The urea determinations should be made at the same time as the determinations of the other elements important in the prognosis, such as the creatinine, the alkali reserve, and the calcium. Although the urea curve usually parallels the creatinine curve, this is not always so. 3. The urea content of the blood may increase from causes outside the kidney: cardiac insufficiency or an intercurrent acute infection, for example. 4. In patients with edema the urea content of the blood is masked by the hydremia, which must be eliminated before one can obtain the true urea value. 5. The increased blood urea may be transient and due to a congestion of the kidney or to an acute attack during the evolution of a chronic nephritis. In acute nephritis the blood urea is of no prognostic value because even when the amount of blood urea is extremely large it may drop rapidly. In acute nephritis the kidney is diseased but the rest of the organism is not; in chronic azotemic nephritis, on the contrary, the kidney and the entire organism are diseased. In the prognosis, therefore, subsidiary facts furnished by the various systems must be taken into consideration. 6. Thus, although the amount of blood urea remains fixed, the prognosis may vary according to the indications furnished by other organs or by other tests. 7. If the blood urea can be caused to disappear with a suitable diet, the prognosis is good; if it cannot, it indicates a serious metabolic disturbance. 8. Transient azotemia is of no prognostic significance; permanent azotemia is serious; progressive azotemia is fatal. The

blood creatinine curve is of great prognostic value. Since creatinine is an endogenous product, almost the entire percentage for which is independent of the diet, and since its curve is influenced very little by circulatory disturbances or by the quantity of urine excreted, it constitutes a valuable clinical guide, particularly if its increase is progressive. From a study of many cases of chronic nephritis, the author draws the following conclusions: 1. Progressive creatininemia is fatal if its figure reaches 8 or 9 mg. 2. High creatinine figures, coinciding with a calcium decrease, are a warning of convulsive accidents. 3. As a rule, the creatinine curve parallels the urea curve. 4. When the urea content decreases and the creatinine content increases, it is the latter that is of primary importance. 5. In acute nephritis the increase in the creatinine is much less marked than that of the urea. 6. In creatinine determinations, autophagia is the chief cause of error; it is eliminated by prescribing a carbohydrate diet. 7. Here, as in the study of the urea, many determinations must be made to obtain an exact curve. 8. Since in azotemic nephritis the disturbed nitrogen metabolism dominates and since the creatinine is an endogenous end-product and the most exact expression in the blood of renal insufficiency, its prognostic value is considerable. 9. In chronic nephritis a progressive creatininemia of from 8 to 10 mg. is fatal, regardless of the figure for urea.

Revue Médicale de la Suisse Romande, Lausanne

48: 721-784 (Sept. 10) 1928

*Roentgen Therapy of Tuberculous Adenitis. A. Eghiayan and E. Wyss.—p. 721.
Cause of So-Called "Natural" Deaths. F. Naville and E. Rosselet.—p. 742.
False Aneurysm of Internal Carotid. M. Bruttin.—p. 749.
*Cancer of Middle Ear. R. Christen.—p. 752.

Roentgen Therapy of Peripheral Tuberculous Adenitis.—According to Eghiayan and Wyss, the results of roentgen therapy of peripheral tuberculous adenitis differ according to the type treated: 1. In simple hyperplasias of the glands the results following exclusive roentgen therapy are excellent 2. In the suppurative, caseous forms of adenitis, roentgen therapy alone usually does not suffice. The resorption of pus or of caseous masses is not impossible, particularly if the glands lie deep; however, a great deal of time would be required for this. Most frequently the suppuration finally reaches the surface and passes through the thinned skin. From esthetic considerations this spontaneous evacuation should be hastened by a minor surgical intervention. 3. In the ulcerative, fistulous forms roentgen therapy alone suffices in favorable and recent cases. The authors give the following incontestable advantages of roentgen therapy over total extirpation in cases of peripheral tuberculous adenitis: 1. It is bloodless, is painless and does not necessitate anesthesia; for all these reasons it is less feared by the patient. 2. Local recurrences, which play such an important rôle in cases treated surgically, are much less frequent after roentgen therapy. 3. In the cases in which the lesions are very extensive or deeply situated, as well as in the cases of multiple ulcerations, surgery is frequently of no value, whereas roentgen therapy gives rapid results. 4. The esthetic results are much better with roentgen therapy correctly used; this problem is of great importance socially, particularly in the cases of cervical foci in women. In the cases of simple hyperplastic adenitis, roentgen therapy leaves no scar whatever; in the suppurative and fistulous forms, even when it is necessary to associate minor surgery with the roentgen therapy, the esthetic results with roentgen therapy are incomparably better than those with surgical treatment alone, which leaves marked, occasionally keloid scars. 5. Total extirpation is accompanied by certain dangers which cannot always be avoided even with an irreproachable technic: section of facial, hypoglossal, spinal accessory, and cervical sympathetic nerves and persistent lymphatic edema of the corresponding arm or half of the face.

Cancer of the Middle Ear.—Christen reports a case of cancer of the middle ear in a man, aged 44; the growth destroyed a portion of the cranium, invaded the right frontal lobe of the brain, extended into the parotid region, perforated into the external auditory canal and into the nasopharyngeal cavity, and gave rise to several lymph gland metastases on a level with the right tonsil. According to the author: Cancer of the middle ear is very rare. The early symptoms, which are those of an ordinary chronic otorrhea, appear insidiously, without acute phenomena. The discharge persists and is soon accompanied by pain, deafness, cerebral phenomena, and dizziness and a little later by facial paralysis; all these symptoms indicate an extensive destruction of the middle ear and of the neighboring organs. Otoscopic examination shows a destruction of the tympanum and a cavity filled with more or less fetid granulations bleeding freely when touched and recurring in a short time after curettage. The diagnosis of cancer is made and confirmed by the microscopic examination of the granulations. After a complete destruction of the middle ear, invasion of the neighboring organs, petrous portion of the temporal bone, meninges, brain and facial nerve occurs. The treatment consists in scraping out the petrous portion of the temporal bone and the mastoid as early as possible; it can be completed by applications of radium and by roentgen therapy. The prognosis is that of cancer; the early invasion of the neighboring organs makes it all the more grave.

48: 785-848 (Sept. 25) 1928

*Roentgen Sign of Perforated Peptic Ulcers. G. Du Pasquier.—p. 785.
Fractures of Metacarpal Bones. D. Dami.—p. 794.
Cancer Control in Switzerland. C. Du Bois.—p. 798.
Indications for Therapeutic Abortion. G. Muller-Bergalonne.—p. 807.

Roentgen Sign of Perforated Gastric and Duodenal Ulcers.—The presence of a crescent-shaped bubble of air beneath each half of the diaphragm in the roentgen examination of cases of perforated peptic ulcer (sign first described by Vaughan and Brams) was noted by Du Pasquier in all cases of perforated gastric and duodenal ulcers examined by him; in the roentgen examination of patients with other acute abdominal conditions the sign was never noted. Two cases are described in which the clinical picture was obscure but in which roentgen examination revealed the presence of air under the diaphragm and led to a correct diagnosis. The mobility of the bubble of air in all positions of the body proves that it is not due to aerocoly, that it is not the immobile bubble of air of a gaseous subphrenic abscess, and that it lies free in the peritoneal cavity.

Archivio Italiano di Chirurgia, Bologna

21: 313-416 (April) 1928

*Anatomic Changes in Diaphragm Resulting from Phrenicotomy. O. Andrei.—p. 313.
*Shock Phenomena from Prolonged Constriction with Hemostatic Bandage. R. Paolucci.—p. 329.
*How Can Postoperative Bronchopulmonary Complications be Diminished? G. Pototschnig.—p. 345.
Bilateral Fusion of Calcaneum and Cuboid as Presumable Anatomicopathologic Substratum in Case of Flatfoot. D. Bargellini.—p. 386.

Anatomic Changes in the Diaphragm Resulting from Phrenicotomy.—From his researches, Andrei concludes: 1. Definite and permanent exclusion of all the decurrent nerve paths of the phrenicus causes a simple atrophy of the diaphragm, which involves uniformly the corresponding half of the muscle, including its costal insertions and the crura. 2. Such atrophy is not associated with fatty degeneration of the muscular fibers but only with a relative increase of the fat of the interstitial connective tissue. 3. The atrophy in question continues to increase for the first few weeks, is most marked from three to four months after the section of the nerve, and remains unchanged after five months. 4. As regards the dog, at least, the phrenicus appears to be the only motor and trophic nerve of the diaphragm following the exclusion of which a permanent paralysis of the corresponding half of the diaphragm becomes manifest.

Shock Phenomena from Prolonged Constriction with a Hemostatic Bandage.—The essential conclusion drawn by Paolucci is that a hemostatic bandage must not be left long at the root of a limb, since, when the bandage is removed, a rapid fall of blood pressure, which sometimes proves fatal, is produced.

How Can Postoperative Bronchopulmonary Complications Be Diminished?—Pototschnig holds that the prophylaxis of such complications must be sought in the strict observation of a series of minor refinements in the preparation of the patient, the performance of the operation, and the postoperative treatment. Of fundamental importance, above all, is the complete clinical examination of the patient. When operation is not urgent and the clinical examination has revealed a chronic disease of the respiratory apparatus open to improvement, it will always be preferable to allow special treatment to

precede the intervention. In some cases, for example in forms of fibrous tuberculosis or chronic bronchitis with extensive bronchiectasis, the operative indications must be studied with especial circumspection. A good functioning of the cardiovascular apparatus, the kidneys, the liver and the pancreas is likewise important in the prophylaxis of bronchopulmonary complications. Preparation of the gastro-intestinal tract is a most important factor. Preparation of the mind of the patient must not be neglected. From a half hour to an hour before the intervention, he gives the patient an injection of morphine (from 0.005 to 0.01 Gm. or, at the most, 0.015 Gm.). Local and regional anesthesia have a notable influence on the prophylaxis of postoperative bronchopulmonary complications, and it is for that reason that he employs it with ever increasing enthusiasm. The quantity of the anesthetic used must be kept down in every way possible. The use of analgesics and alkaloids before the beginning of the general anesthesia enables the operator to reduce greatly the quantity of the anesthetic. He advises small incisions, as a rule, though admitting in some cases the need for large incisions. He does not drain and hence renounces completely the use of any abdominal bandage that impedes deep breathing. He has found lobeline an excellent remedy to promote deep breathing and facilitate the elimination of the ether. Great care must be exercised to prevent chilling of the patient.

Beiträge z. klinischen Chirurgie, Berlin

143: 363-598, 1928

Subperiosteal Resection for Severe Rachitic Deformities (Curvatures) and Subsequent Bone Regeneration. H. Schloessmann.—p. 365.
*Multiple Tuberculous Cystic Osteitis; Bone Tuberculids. O. Jüngling. —p. 401.
*Intestinal Polyposis: Heredity; Relation to Carcinoma. O. Jüngling. —p. 476.
Abdominal Resection of Superior Half of Stomach. E. Borchers.—p. 484.
Consistency of Spongy Bone. C. Göcke.—p. 539.
*Roentgen Sarcoma. H. J. Alius.—p. 567.
*Acute Necrosis of Pancreas and Ascariasis. R. Andler.—p. 574.
Cuneiform Osteotomy of Perthes for Flatfoot; Indications and Results. W. Baltisberger and J. Port.—p. 584.

Multiple Cystic Tuberculous Osteitis.—Jüngling points out that under certain, as yet unknown, circumstances, the human organism reacts to the tuberculous virus in a typically definite manner, characterized by a negative tuberculin reaction and the formation of tuberculous nodes from epithelioid cells and fibroblasts, containing few lymphocytes circumferentially, with or without Langhans giant cells, and never caseating. The skin is the preferred point of attack in the form of lupus pernio and Boeck's sarcoid. The disease also attacks connective tissue, mucous cavities, tendon sheaths and bones, especially the metatarsus and phalanges, forming a circumscribed focus and gradually eroding the bone without any interference with the periosteum. These bone foci are usually multiple and in the roentgenogram have the appearance of cysts. Other organs may be affected, or the bone lesion may be a part of a general tuberculosis. Jüngling's observations indicate that the bone involvement is a definite clinical entity, a tuberculid of bone, entirely different from the usual tuberculous disease of bone. Although the roentgenogram is very characteristic, the diagnosis should not be based on it alone. The clinical history and the results of examination of the whole organism must differentiate the disease from other bone lesions. The course of the disease is essentially a chronic one. There seems to be little tendency to healing, less than in skin tuberculosis. Present methods of treatment seem to be of little or no avail. Favorable results have been reported from the use of the roentgen ray, but, by and large, these results have been so exceedingly variable that a definite statement as to their real worth cannot be made. Further study and observation must determine finally what treatment, if any, is indicated and effective.

Familial Intestinal Polyposis.—Jüngling reports fifteen cases of this disease occurring in three generations of one family. The symptomatology is not characteristic; in fact, for many years there may not be any symptoms at all. Rectoscopy alone serves as a basis for arriving at the diagnosis. The rectal mucosa is inflamed and granular; of course, polyps are always present. The author assumes that the underlying cause of the disease is an hereditary sensitiveness of the rectal mucosa to chemical and mechanical irritants coming from the feces passing over it. That there is any relationship between these polyps and carcinoma cannot be determined. The evidence favoring such a relationship is too indefinite to be of value.

Roentgen Sarcoma.—Alius relates the case of a man who submitted to roentgen treatment of a lupus vulgaris for seventeen years and then developed a sarcoma on the site exposed to the rays. The tumor grew rapidly and finally was excised surgically. A year later there was a recurrence. Neither the first nor the second specimen was proved to be malignant. Four months after the second excision, the growth had recurred. Microscopic examination showed it to be a spindle cell sarcoma. A fourth recurrence was excised two months later. By the end of the month the patient complained of pains in the abdomen. The previous site of the disease was the supraclavicular region. Pain, emaciation and bloody stools followed in rapid succession. The roentgen examination with barium showed an involvement of the ascending colon. Then came dyspnea, radial paralysis of one hand and mental symptoms. Inside of three months death occurred, eighteen months after the patient first noticed a tumor. The necropsy disclosed multiple metastases in the intercostal and pectoral muscles, pleura, lungs, ileocecal lymph nodes, cecum and left temporal lobe of the brain. Admitting that the lupus had some connection with the reason for the development of the sarcoma, the author is of the opinion that the main cause was the long continued roentgen irradiation. The case is particularly interesting in that it is the only one of sarcoma following roentgen irradiation in which it was possible to follow the development of the growth histologically from its inception as an ulcer to the appearance of its malignant nature.

Acute Necrosis of Pancreas and Ascariasis.—The first symptom in the case cited by Andler was a dull griping pain in the epigastrium. Then, the patient vomited bile once. The pain rapidly became more intense and continuous. He was cyanotic. The upper abdominal region was retracted, hard, extremely sensitive to pressure. The lower abdominal region was soft. The temperature was 37.4 C. A disease of the pancreas was suspected and laparotomy was performed. The abdomen contained a bloody serous fluid; the upper part of the jejunum was cyanotic and for a distance of about 65 cm. it was greatly distended and filled with ascarids. It had the appearance of a sausage. The ascarids were clearly visible through the jejunal wall. The remainder of the jejunum, the duodenum, the ileum and the stomach did not contain any ascarids. The peritoneum overlying the intestine infested with the parasites was inflamed. The pancreas was bluish red and appeared sausage-like, with no trace of pancreatic tissue to be seen. Three areas of fat necrosis were noted on its anterior surface; none elsewhere. Seventy-two ascarids were removed from the bowel; a large drain was placed over the pancreas and the abdomen was closed. Convalescence was uneventful. On the tenth day a piece of pancreas the size of a finger was extruded. On the twenty-second day the pancreatic fistula was closed and the patient left the hospital on the fortieth day feeling entirely well. The gallbladder and biliary passages did not contain any parasites.

Deutsche medizinische Wochenschrift, Berlin

54: 1531-1578 (Sept. 14) 1928

Psychotherapy in Medical Practice. H. W. Gruhle.—p. 1531.
Safety, Cure and Prevention as Aims of Modern Psychiatry. W. Weygandt.—p. 1533.
Specific Dynamic Action of Foodstuffs. A. Bornstein.—p. 1535.
*Digestive Tract and Protection of Organism Against Infection. O. Kestner.—p. 1536.
*Treatment of Circulatory Weakness, Particularly in Lobar Pneumonia. Schottmüller.—p. 1538.
*"Rheumatic Infection" and Internal Medicine. W. H. Veil.—p. 1539.
Problems of Surgery. M. Kirschner.—p. 1541.
*Action of Histamine, Blood Regeneration and Appetite. J. Pal.—p. 1544.
Abdominal Delivery: Technic and Indications. T. Heynemann.—p. 1544.
Dick Reaction. H. Kleinschmidt.—p. 1547.
Punctures with Fatal Results. T. Fahr.—p. 1550.
Mass Poisoning from Phosgene. C. Hegler.—p. 1551; F. Wohlwill. —p. 1553; H. Mayer.—p. 1557.
Qualitative Measurement of High Voltage Roentgen Therapy. H. Holthusen and A. Liechti.—p. 1558.
*Causes and Treatment of Alopecia. R. Habermann.—p. 1560.
Action of Thyroxin. E. A. Schnieder.—p. 1561.

Digestive Tract and Protection of Organism Against Infection.—The food, Kestner points out, is not mixed in the stomach. If a food bolus containing pathogenic bacteria arrives

in the left half or in the middle portion of the stomach, infection is impossible. If it arrives in the right portion, infection is possible. Water-borne bacteria are more likely to infect the organism than food-borne bacteria. Fluids taken on an empty stomach pass through the stomach and along the small intestine with extreme rapidity, especially in a condition of thirst, so that neither the gastric nor the pancreatic juice has a chance to work on it. Fluid taken with meals may pick up bacteria from the surface of the food boluses in the stomach, before they have been killed by the gastric acid, and carry them with it into the intestine; for, while quantities of fluid up to a cupful or glassful follow the route along the lesser curvature (*magenstrasse*), larger quantities do not confine themselves to this route.

Treatment of Circulatory Weakness, Particularly in Lobar Pneumonia.—Schottmüller believes that the contraindication to strophanthin within five days after administration of digitalis is too strict. When danger exists, he is willing to give strophanthin even when digitalis has been given the day before. He has had good results with intravenous drop infusion of a mixture of suprarenal extract and physiologic solution of sodium chloride continued for days. If symptoms of overdosage of epinephrine occur, the infusion need not be broken off, but the number of drops per minute should be diminished by compressing the tube. If the same vein is used longer than one day, thrombosis is likely to occur. It clears up readily, however, and he has never seen embolism or other accidents result. This treatment should be carried out only when the patient can be under constant observation. He has used it in twenty patients. Of these, ten died and ten recovered.

"Rheumatic Infection" and Internal Medicine.—The fully developed picture of acute articular rheumatism includes, Veil asserts, pancarditis, pleuritis, bronchopneumonia, peritonitis, swelling of the liver, nephritis, and enlargement of the spleen. Though severe, it is not, in the end, as pernicious as a streptococcus infection of the "lenta" variety. The blood picture is more favorable. Isolated diseases of the heart muscle with or without disturbances in rhythm, decompensated or not, are frequently of rheumatic origin. In every case of subfebrile temperature which cannot be explained by pulmonary disease, rheumatism should be suspected. Brief attacks of icterus, chronic bronchitis and, more especially, nephritis are frequent equivalents of articular rheumatism. In searching out the presence of rheumatism, the conception of the ebb and flow of a general infection must be borne in mind. For the prognosis also this has its importance, since reparatory processes may set in when least expected. As for rheumatism in the narrower sense, articular and periarticular changes and changes in the attachments of the tendons form its basis. Myalgia, areas of hardening in the muscles and the greater number of neuralgias are secondary. The successful treatment of sciatica depends on the recognition of this fact. So-called constitutional causes may be, rather, the results of the infection, and racial predisposition may be explainable on the basis of a prevalence of rickets and poor bone structure. In persons thus affected the rheumatic infection more easily gains a foothold in the joints in middle life.

Action of Histamine, Blood Regeneration and Appetite.—Pal's investigations lead him to the assertion that histamine is one, and perhaps the most important, of the substances that have the power to regenerate erythrocytes. Even in severe cachexia, histamine brought about return of appetite and improvement in the general condition. These effects were striking in a case of advanced, stenosing cancer of the stomach in a man, aged 77. It is probable that the histamine of the diet and of the tissues plays a part in regulating blood regeneration and that a deficiency of histamine is a factor of importance in the development of certain forms of cachexia.

Cholesterol in Treatment of Alopecia.—In a large number of animals of various kinds, Habermann found that a preparation of cholesterol was more effective in promoting the growth of hair than petrolatum, with or without cholesterol, or dry massage. Pure alcohol seemed in some cases to check hair growth. Loss of hair from thallium poisoning could be prevented by the cholesterol preparation. It was applied with a soft brush. The effects of the treatment in thirty-five patients with alopecia seborrhoica were highly favorable. The subjective symptoms disappeared, the production of scales and of sebum on the scalp diminished. In most cases there was also increased growth of hair. In some cases a distinct increase in the cholesterol content of the hair could be determined. In hair that was starting to turn gray the amount of pigment was increased.

Klinische Wochenschrift, Berlin

7: 1721-1768 (Sept. 9) 1928

Genital Hormone and Disturbances of Internal Secretion of Gonads. W. Berblinger.—p. 1721. C'cn.
Causes of Alimentary Hyperglycemia on Diets Rich and Poor in Carbohydrate. F. Schellong and H. Kramer.—p. 1726.
New Organism Causing Anemia in Dogs. W. Kikuth.—p. 1729.
Scarlet Fever Epidemic in Königsberg. A. Böttner.—p. 1731.
*Behavior of Blood Lactic Acid in Hepatic Disease. H. Schumacher.—p. 1733.
Menstrual Symptoms in Adnexal Inflammations. F. C. Geller and T. Paus.—p. 1737.
*Immunity After Chickenpox. P. Freud.—p. 1739.
Acetic Anhydride-Sulphuric Acid Test (Boltz) in Cerebrospinal Fluid. E. Dietrich and G. Wüllenweber.—p. 1739.
"Effect of Small Quantities of Water on Vessel Width." R. Rigler.—p. 1741.
*Group-Specific Differentiation of Leukocytes. P. Wichels and W. Lampe.—p. 1741.
Substance in Peptone with Inhibiting Influence on Blood Coagulation. B. E. Brüda.—p. 1742.
Case of Laboratory Infection with Relapsing Fever Through Conjunctiva. D. A. Iwanowa.—p. 1742.
Insulin Fattening Treatment. R. Bauer.—p. 1743.

Behavior of Blood Lactic Acid in Hepatic Disease.—In patients with severe forms of injury to the liver, Schumacher found the lactic acid content of the blood to be increased; in lighter forms of hepatic disease this was often not the case. She injected a quantity of sodium lactate corresponding to 4 Gm. of lactic acid in 20 cc. of water into the vein in a number of patients with diseases of the liver. The blood lactic acid remained high for a longer time than in persons with healthy livers. A few healthy persons with particularly weak muscles reacted in this respect similarly to the patients with disease of the liver.

Question of Immunity After Chickenpox.—A case of relapse of chickenpox after six weeks is reported by Freud from a babies' home. The child, aged 11 months, had chronic pneumonia at the time he first became ill with chickenpox and it is assumed that this disease prevented the development of immunity. In the same institution a 6 months old child had typical chickenpox. A year and eight months later, on the occasion of another epidemic of chickenpox in the home, he came down a second time with typical chickenpox. The reinfection in this case is thought to have been made possible by a lowering of the immunity by a recent severe attack of intestinal catarrh.

Group-Specific Differentiation of Leukocytes.—Working with leukocytes freshly obtained from the blood of patients with leukemia, Wichels and Lampe found that, as regards isoagglutination, leukocytes of group A blood behaved in the same way as erythrocytes of group A blood.

Monatsschrift für Kinderheilkunde, Leipzig

40: 1-192 (Aug.) 1928

*Hematologic Examinations in Premature Infants. O. Herz.—p. 1.
Rôle of Congenital Syphilis in Feeblemindedness in Children. G. Steller.—p. 42.
Goat Milk Anemia: Clinical and Pathologic Study. W. Grävinghoff and C. Neuhaus.—p. 71.
Late Spasmophilia. H. Schlack.—p. 89.
*Attenuated Form of Measles After Prophylactic Injection of Serum. H. Alschwang.—p. 101.
Pathology of Protein Fever. D. Orosz.—p. 110.
*Treatment of Anemia of Infancy with Liver Diet. O. Herz.—p. 116.
*Bilateral Occlusion of Renal Pelvis by Stone in Young Child. R. Stohr.—p. 124.

Attenuated Form of Measles After Prophylactic Injection of Serum.—Measles was introduced into a division of an infants' home, which contained twenty-two infants, all physically below normal. Half of these children, the weakest being selected, were injected with convalescent serum or "mother" serum (the serum of an adult who had had measles in childhood). The "mother" serum was given in the incubation period, i. e., on the fifth or sixth day (reckoned from the day of the appearance of the rash in the child who had introduced the infection) and five or six days before the beginning of the

catarrhal stage. The convalescent serum had been given before the incubation period, i. e., from twenty-one to thirty-one days before the beginning of the catarrhal stage. Six children received convalescent serum; three, "mother" serum, and two, mixed convalescent and "mother" serum. The dose of convalescent serum was 2.5 cc.; that of "mother" serum, from 10 to 25 cc. All the children in the division came down with measles. In the prophylactically treated children the rash appeared, on the average, three days later than in the others. Koplik's spots were present in the same number of cases, seven, in each group. No difference could be detected in the appearance of the rash in the two groups. On the other hand, the general condition of the children injected with serum was much better than that of the other children, and the fever period was shorter. In the noninjected children there were fifteen complications (whooping cough, meningitis, pneumonia, diphtheria, bronchitis and stomatitis). In the injected children there was only one case of complication (bronchitis). Among the injected there were no deaths; of the noninjected children, six died, all from complications.

Treatment of Anemia of Infancy with Liver Diet.—In fourteen of fifteen infants and young children with secondary anemia, Herz obtained good results with a liver powder. (He did not succeed with liver extract.) The one absolute failure was in a case of sarcoma.

Bilateral Occlusion of Renal Pelvis by Stone in Young Child.—Stohr reports a fatal case of anuria from occlusion of both ureters by stone in a 16 months old boy. One stone, oval and the size of a bean, was found in each pelvis at the entrance to the ureter. The ureters did not contain other stones. The stones consisted of pure calcium oxalate. The child had been fed almost exclusively on a browned flour mixture, prepared from flour, water and an artificial butter substitute. At the age of 6 months two pinhead sized stones had been passed with the urine. Stohr believes that the unsuitable diet was responsible for the stone formation, either from the lack of an animal product or from the vitamin deficiency.

Münchener medizinische Wochenschrift, Munich

75: 1575-1622 (Sept. 14) 1928

*New Serologic Reaction Showing Differences Specific to Individual. W. Zangemeister and E. Krieger.—p. 1577.
Puerperal Sepsis. H. Schottmüller.—p. 1580.
*Chemical Reaction to Antirachitic Vitamin. W. Stoeltzner.—p. 1584.
Physiologic and Pathologic Circulation of Cerebrospinal Fluid. G. Schaltenbrand.—p. 1584.
Pathognomonic Significance of Hypersensitiveness to Acetylsalicylic Acid in Patients with Asthma. W. S. van Leeuwen.—p. 1588.
*Sporadic Trichinosis in Man. G. Adamy.—p. 1591.
*Increase in Thrombosis and Embolism in Recent Years. P. Martini and R. Oppitz.—p. 1593.
Bartonella, New Group of Anemia Organisms. W. Kikuth.—p. 1595.
*Anemia in School Children. H. Koopmann.—p. 1598.
Gerson-Sauerbruch-Herrmannsdorfer Diet in Skin Tuberculosis. S. Bommer.—p. 1599.
Influence of Splenectomy on Course of Experimental Syphilis in Rabbits. R. Nothhaas and S. Mayeda.—p. 1603.
Hyperpyrexia After Operations in Infancy. F. Gierthmühlen.—p. 1604.
Vomiting in Children. F. Hamburger.—p. 1605.

New Serologic Reaction Showing Differences Specific to Individual.—Zangemeister and Krieger present a preliminary report of serologic investigations with the new Zeiss "Stufenphotometer," an instrument which enables one to make quantitative comparative measurements and to follow step by step very slight changes in the turbidity of the material under examination. In certain serums and serum mixtures a reaction is obtained consisting of a diminution of clearness which reaches its maximum in from six to eleven hours. After from eighteen to twenty-four hours the serum regains its original clearness. This reaction was found in the blood of women in the latter months of pregnancy, in mixtures of the blood of the mother with that of her own child (but not with that of another woman's new-born child), in mixtures of the blood of the father and of his child, and in mixtures of the maternal and paternal bloods.

Chemical Reaction to Antirachitic Vitamin.—When phosphorus pentoxide is added to irradiated ergosterol oil (a 1 per cent solution of antirachitic vitamin in olive oil), a reddish brown color appears in the mixture, which gradually becomes darker until it is almost black. The same reaction can be obtained with cod liver oil, but not with ordinary olive oil with or without the addition of nonirradiated cholesterol.

Sporadic Trichinosis in Man.—Adamy reports two sporadic cases of trichinosis. In one the clinical picture resembled that of acute diffuse glomerulonephritis; in the other, that of thrombophlebitic sepsis. The blood examination pointed to the right diagnosis. High blood eosinophilia is the most characteristic symptom.

Increase in Thrombosis and Embolism in Recent Years.—In the material of Martini and Oppitz between 1920 and 1927 there were 370 cases of thrombosis and embolism. In 130 of these, intravenous injections had been given. There remain 240 cases in which intravenous treatment had not been given. Between 1910 and 1919 there were 131 cases of thrombosis. About 120 of these had not been treated intravenously. From these figures it appears that there was a 100 per cent increase in the cases of thrombosis and embolism from which the influence of intravenous injections could be entirely excluded.

Anemia in School Children.—Koopmann found anemia to be much less frequent in school children (of Hamburg) than has been supposed. There was a noticeable connection between the incidence of anemia and the color of the hair. It was most frequent in children with light blond hair. Among the black haired children examined, no cases were found.

Wiener klinische Wochenschrift, Vienna

41: 1301-1332 (Sept. 13) 1928

"Cirrhoses" of the Liver. O. Weltmann.—p. 1301.
*Blood Groups and Therapeutic Malaria. M. Obermayer and J. Wendlberger.—p. 1304.
Traumatic and Spontaneous Ruptures of Renal Pelvis. W. Fritz.—p. 1306.
Secondary Origin of Diverticula of Alimentary Tract. T. Bársony.—p. 1308.
Addition of Sodium Citrate in Carbon Monoxide Tests. H. Kockel.—p. 1310.
Biology of Ovarian Hormone. M. Dohrn.—p. 1311.
Vitamins: Nature and Uses. H. Mautner.—p. 1315.
Treatment of Heart Weakness. W. Scholz.—p. 1320. C'cn.
Instruction of Students in Administration of General Anesthesia. W. Weibel.—p. 1322.
Diagnosis and Treatment of Diseases of Bursae Mucosae. F. Starlinger.—p. 1325.
Causes and Treatment of Hoarseness. E. Glas.—p. 1326.

Blood Groups and Therapeutic Malaria.—Obermayer and Wendlberger reason that, through the agglutination of the donor's erythrocytes in the serum of a patient of an incompatible blood group, the malaria plasmodia contained in the donor's blood cells might be injured. This could explain the lengthening of the incubation time that has been noted in some cases of incompatibility between the bloods of the malarial donor and the paretic patient. In the examination of a large number of serums, Obermayer and Wendlberger found that the agglutinative power of serums of the same blood group differed widely. In patients whose blood has a slight agglutinative power, the incubation time would be less influenced, which would account for the fact that a prolongation of the incubation period is not seen regularly in cases of incompatibility of bloods. The agglutinative power of a serum seems to be constant.

Klinicheskaya Meditsina, Moscow

6: 1017-1091 (Aug.) 1928. Partial Index

*New Infectious Disease: "Field and Water Fever." B. P. Koushelevskiy.—p. 1037.
Typhoid and Paratyphoid B Infection. S. V. Puresev and M. N. Androsov.—p. 1048.
*Atypical Typhoid. G. S. Demianov.—p. 1055.
*Typhoid Resembling Malaria. A. I. Dobrolubov.—p. 1058.
Course and Treatment of Malaria. P. P. Moufel.—p. 1062.
*Plasmochin Treatment of Malaria. Sh. I. Sirakian.—p. 1065.
Anatomy of Spleen and Change in Its Configuration in Malaria. L. A. Oganesov.—p. 1070.
Complications in Nervous System After Vaccination. U. V. Konovalov.—p. 1076.
Treatment of Malaria with Solution of Quinine Hydrochloride, Iodine and Alcohol. M. M. Golynko.—p. 1079.
Two Cases of Spontaneous Rupture of Symphysis Pubis During Labor. I. M. Petshnikov.—p. 1081.

New Infectious Disease, "Field and Water Fever."—Koushelevskiy describes the peculiarities of "field and water fever" and its distinction from Weil's disease in the epidemics that have recently occurred in flooded districts, particularly in central Europe. During the four months, from the latter part of July until November, 1927, he had twenty-two typical and

eight atypical cases of the disease. The cardinal symptoms are: typical fever—acute at the beginning, with early lysis, and mostly of seven days' duration, maximum, thirteen days; severe headache, less frequently backache, pains in the extremities and the neck, hyperemia of the soft palate, conjunctivitis, weakness of the muscles, which remains long after the disappearance of other symptoms. The chills at the beginning of the disease and sweats at its termination are not pronounced. The rash is mostly of the type of a scarlet fever exanthem. The enlargement of the liver did not occur in previously described epidemics. In individual cases a change in the hemogram was observed in the afebrile period: increase of neutrophils and lymphocytosis. The course is benign; icterus, nephritis and hemorrhagic phenomena are absent. Systematic bacteriologic researches were not carried out. The epidemic occurred in a region of flooded fields; hence the name "field and water fever."

Atypical Course of Typhoid.—Of 150 cases of typhoid in the epidemic of 1928 in Krasnodar, 20 per cent started with acute rhinitis. In a number of cases with symptoms of pneumonia or influenza, Eberth's bacillus was found in the blood. The temperature dropped on the fifth day after resolution of the pneumonic focus and remained subfebrile during one month, while the pleural rub was also present. No symptoms of typhoid were apparent. Some other cases, which started with bronchopneumonia, presented a clinical picture of typhoid. In one case relapse occurred and the further course of the disease was without pulmonary symptoms. In 15 per cent of all the cases intestinal symptoms, such as pain, were mostly localized in the region of the appendix; meteorism or peritoneal phenomena were not observed. Five per cent of the patients had cholecystitis, some of them without pain. The quantity of blood bilirubin was decreased in cases with cholecystitis. Four cases of acute mastitis were seen; one patient was a girl, aged 15 years. The death rate during the epidemic was 2 per cent. In some of the cases the erythrocyte sedimentation speed was tested. In seven cases it was decreased at the beginning of the illness, in five it was normal and in twenty-seven cases it was increased. In the period of recovery, thirty-four patients with normal temperature showed an increase.

Clinical Peculiarity of Typhoid Epidemic in 1927 (Malaria-Like Typhoid).—Dobrolubov states that during the typhoid epidemic in 1927 a number of cases were at first diagnosed as malaria or influenza and were later called "paratyphoid." This term was used symptomatically, not bacteriologically.

Plasmochin Treatment of Malaria.—Sirakian bases his conclusions on the observation of nineteen patients treated with plasmochin. He says: 1. It is a specific measure in malaria, of parasitotoxic nature. 2. In persistent cases, when quinine does not have any effect plasmochin is active against the gametes. 3. After treatment with plasmochin relapses seldom occur.

6: 1093-1148 (Aug.) 1928

Nature of Malignant Growths. N. N. Petrov.—p. 1093.
*Cancer of Uterus. N. M. Kakoushkin.—p. 1100.
Cancer in Various Professions. N. S. Svonitzkiy.—p. 1108.
Blood Transfusion in Anemia Before Gynecologic Operations. I. L. Braude and E. M. Schwarzman.—p. 1114.
Etiology of Cancer of Uterus. G. G. Ter-Gabrielian.—p. 1121.
*Diagnosis and Treatment of Primary Cancer of Lung. M. B. Rosenblum and I. S. Shucher.—p. 1132.
*Serologic Test for Tumors of Bladder. R. M. Maislish and P. I. Gelfer.—p. 1141.
Hematomas of Ovary. A. F. Slatman.—p. 1144.

Some Data on Cancer of Uterus.—Cancer of the uterus is not increasing, Kakoushkin believes; it remains almost stationary. The most predisposed are elderly multiparas, especially those who have had a postpuerperal infection. As prophylactic measures, he recommends raising the social level, especially among women, development of personal hygiene, and rational conditions during childbirth. Women with a cancer tendency should be under the constant observation of a gynecologist. For surgical intervention the widest indications should be established. Of 524 cases, only eighty-nine were inoperable. The radical operation was performed in the others. Kakoushkin removes the enlarged pelvic lymph glands when the adhesions to the walls of the vessels are not very firm. In recurrent cases, for the past two years autohemotherapy has been used as a therapeutic and prophylactic measure.

Diagnosis and Treatment of Primary Cancer of Lung.—Rosenblum and Shucher find that primary cancer of the lung is increasing. It is more prevalent in men than in women (twenty-one men, six women). Cancer of the lung may be associated with tuberculosis of various organs. In their cases, smoke seemed to be an etiologic factor. Inheritance does not appear to play any rôle. The diagnosis is seldom made in the early stages. It may be confused with an acute infectious disease.

Serologic Test for Tumors of the Bladder.—In cases observed by Maislish and Gelfer, Botelho's test gave the following results: 1. In benign genito-urinary diseases the reaction was negative. 2. Such symptoms as hematuria did not influence the reaction. 3. In malignant cases the reaction was positive. 4. In uncertain cases the reaction should be repeated, as after a certain period of time, with the progress of the growth, the negative reaction might become a positive one.

Nederlandsch Maandschrift v. Geneeskunde, Leiden

15: 273-330, 1928

Some Psychiatric Cases. G. Jelgersma.—p. 273.
*Case of Pentosuria in a Child. J. C. Schippers.—p. 285.
*Oculoneurovegetative Reflexes. N. E. ten Have.—p. 291.
*Sedimentation Speed of Erythrocytes and Serum Protein Values. W. H. Kapteyn.—p. 320.

Case of Pentosuria in a Child.—A girl, aged 7, was brought to the clinic with vague general symptoms of four weeks' standing. She complained particularly of pain in the left chest and was very nervous. The family physician had reported sugar in the urine. At the clinic the reactions for sugar were atypical until pentose was sought. The orcin test for pentose was strongly positive and the typical absorption band was seen in the spectrum. About 0.4 per cent of pentose was present in the urine. The fasting blood sugar was 0.085 per cent; after an ordinary meal with plenty of carbohydrates, it was 0.180 per cent. The diuresis was normal. The urine of the parents and brother of the patient was examined and found normal. A great-grandmother and a great-aunt had died of "diabetes," whether true diabetes mellitus or not could not be ascertained.

Oculoneurovegetative Reflexes.—Ten Have found that certain persons react to pressure on both eyeballs with slowing of the pulse, decrease of leukocytes in the peripheral blood and slight rise in blood pressure. The slowing of the pulse and the leukocyte count, but not the rise in blood pressure, could be influenced by administration of atropine sulphate. All of these persons presented respiratory arrhythmia, which remained unaffected by the atropine administration.

Sedimentation Speed of Erythrocytes and Serum Protein Values.—Kapteyn examined seventy-four specimens of blood, the greater part of which were from patients in various stages of tuberculosis. He found that increase in the globulin content of the serum was almost always accompanied by increased sedimentation speed of erythrocytes. In all cases of inactive tuberculosis the albumin-globulin quotient was ± 1.5 (normal $= 1.5$), whereas in active tuberculosis the quotient was 1 or less than 1. Increased sedimentation speed was, furthermore, found associated with increase in the percentage of toxic granules and with shifting of Arneth's formula to the left. The sedimentation speed is of no value in the differential diagnosis between various kinds of acute and chronic inflammatory processes, but it can aid in answering the question whether a tuberculosis process is active or inactive. In tuberculosis of the bronchial glands, in which the temperature may remain normal, this test is likely to prove especially useful.

Finska Läkaresällskapets Handlingar, Helsingfors

70: 595-668 (Aug.) 1928

*Goiter and Iodine Content of Water. E. Adlercreutz.—p. 595. C'td. Roentgenography of Fractures of Extremities. R. Faltin.—p. 630.

Incidence of Goiter in Finland and Relation to Presence of Iodine in Water.—Adlercreutz concludes that endemic goiter is probably due to many factors, which may vary in different places. A relation between this regional difference and the absence of any uniform type of endemic goiter seems possible.